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FLYING's FAMILY

WHEN Assen "Jerry" Jordanoff sits down to plan the airport of the future (see "Strato-Port," p. 9), he draws on the experience of 40 years as an active airman and aviation writer. Born in Bulgaria, he studied aeronautical engineering in that country and in France before coming to the U.S. 32 years ago.

He has been associated with the American aircraft industry ever since—as commercial pilot . . . as airplane designer with Curtiss-Wright and in his own engineering firm . . . as writer of technical training manuals for the U.S. armed forces, covering such aircraft as the P-47, B-17, C-54, B-29 and others . . . and as author of numerous picturesquely written books in a more popular vein, including "Flying, How To Do It," "Your Wings," "Through the Overcast," "Safety in Flight," "Men Behind the Flight," "Dials and Flight," "Power and Flight," "Men and Wings," and "Jordanoff's Illustrated Aviation Dictionary."

When he has the idea for his Strato-Port firmly established, Jerry will be able to concentrate on another design he has in mind—a troop transportation vehicle that will travel on roads, rails, snow, mud or water, and will even take to the air if necessary.

* * * *

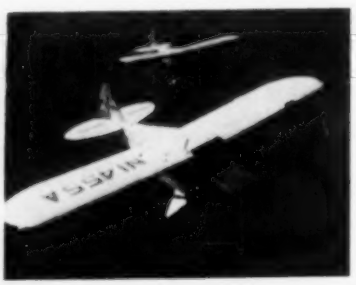
ANNALIST of the atmosphere, chronicler of the clouds, scribe of the skies—it's a temptation to wax poetic when you start to describe the work of Eric Sloane, whose "Warm Fronts Have Rainy Backs" (p. 22) is one of a series of "Weather Wisdom" articles he's writing for FLYING.

Eric Sloane

Eric was graduated from Yale and learned to fly soon afterward at Floyd Bennett Field in Brooklyn, N.Y. Wiley Post was a close friend and Eric frequently flew in the famous *Winnie Mae*.

At Wright Field during the war Eric wrote a number of manuals for the Air Force on weather and the effects of flight on the human body. He also designed a serie of three-dimensional models on weather for the U.S. Navy. This type of model was the forerunner of nine huge moving weather models Eric later designed for the million-dollar Hall of Atmosphere, a project which he conceived and carried out at the American Museum of Natural History in New York.

Eric is probably the world's foremost cloud painter and his cloudscapes are owned by many outstanding leaders in aviation. He is also the author of several books, among them: "Clouds, Air and Wind," "Skies and the Artist," "Camouflage Simplified," and the forthcoming "Eric Sloane's Weather Book."



THE COVER: Piper *Tri-Pacer* (foreground) and *Pacer*. Photo by Hans Groenhoff.

FLYING

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FLYING
VOLUME 51, NO. 2
AUGUST, 1952

AN EDITORIAL

THE PEOPLE MUST KNOW

Difficulty encountered by the Air Force in persuading the Congress to finance a projected program of 143 Air Wings (126 combat plus 17 transport) should be a lesson to all concerned.

Popular government, to operate effectively, demands public understanding of major issues. This is basic to democratic procedures.

Those intimately familiar with comparative military values and with industrial capabilities can readily understand that the 143 Wing program of the Air Force is a finely balanced minimum of airpower calculated by the Joint Chiefs of Staff to be necessary in 1954 to make impractical a Soviet attack at that time.

A lesser program, or one delayed to a later date, would go far to invite World War III, in the judgment of those best able to render expert opinion.

Why then the hesitation of the Congress and the frightening prospect posed for months of "too little and too late"?

Granting the patriotic zeal of the Congress as a whole and the grasp of the subject by some individual Congressmen and Senators, it is still true that Congress has been inadequately briefed by the Defense Department.

Neither the decisive character of airpower, nor the relative amount of it necessary at specified times to accomplish its objective in the face of continuous Soviet threats, has been clearly and repeatedly explained.

If it be suggested that the Congress is alarmed at the cost of airpower and, before granting funds, seeks to eliminate waste and extravagance as exampled by isolated cases of bad management, we must beg permission to yawn.

Congress as a whole could scarcely know less about the economics of airpower. Otherwise the "on again, off again, gone again" policy on research and development which has cost the taxpayer millions would have been intolerable to Congress.

If Congress wanted to go to the heart of airpower economics it would long ago have dug into the whole broad subject of defense procurement—lack of incentive to creative effort in defense contracts, delay in firm orders to contractors, cutback in the midst of production line operations, military air bases maintained for reasons extraneous to military necessity, make-work sub-contracts which multiply prime contractor costs, and the "butter and guns" formula itself which throws defense industry into a market fiercely competitive with a booming civilian economy.

No, it is not wasted bags of coffee or some management slip of extravagance or variance from good business practice which deters the Congress from swift agreement with defense leaders. The Air Force has not carried the Congress or the people along with its thinking. Congress feels no public pressure for 143 Air Wings. Thus the Air Force, regardless of how right its thinking and how sound its policy, finds itself standing alone in a time of crisis.

Like most military organizations, the Air Force does not understand that, for practical purposes, a product or a policy is only as good as the customer thinks it is, and that the process of education must be as continuous as is the birth rate.

Admittedly, the briefing of the Congress and the people is a gigantic job. But decision to spend twenty two billions in one year for airpower is also a gigantic responsibility. It involves public sacrifice. It demands public understanding.

The Air Force is a sound and conscientious organization. In doctrinal concept, in operational techniques, in training thoroughness, in cost consciousness, it is the best Air Force on earth.

One thing alone is lacking—public understanding—and that one thing could cost the Air Force its function and the nation its life.

The hesitation of the Congress is but the mirror of Air Force failure to keep the people abreast of its problem.

Gill Robb Wilson

Gill Robb Wilson
Editor and Publisher

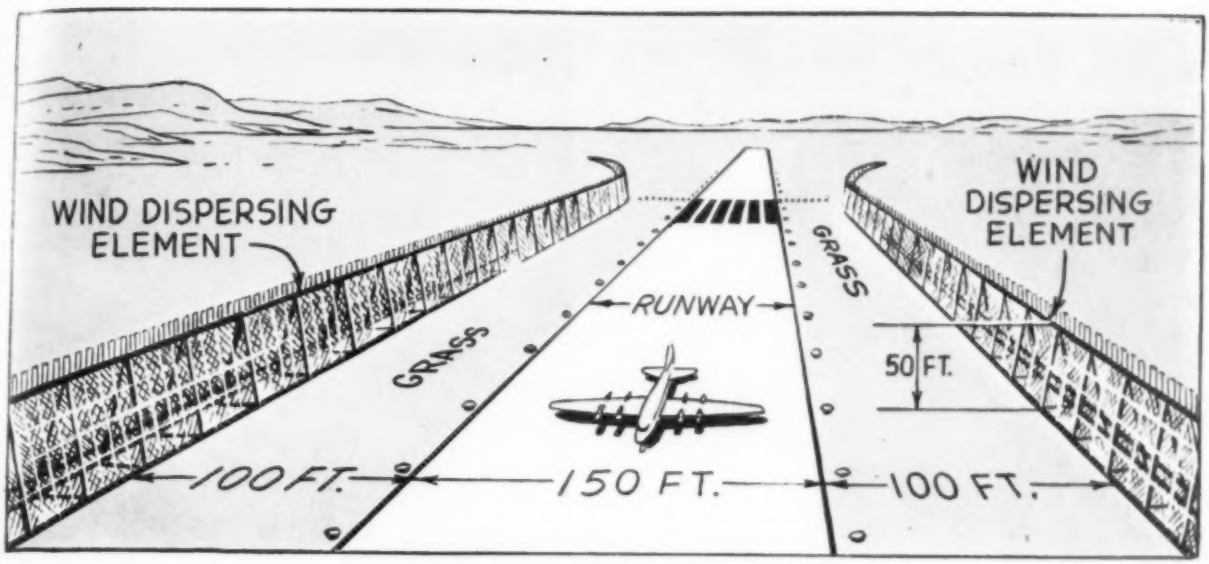

Figure 1

STRATO-PORT

By ASSEN JORDANOFF

Assen Jordanoff

WHILE STEADY progress has been made by aviation industry and commerce, airport design has remained comparatively static. As I see it, the only improvement in airport design has been to make runways longer and longer to accommodate the requirements of larger aircraft with comparatively higher gross weight and higher wing loading. Furthermore, expensive criss-crossing runways to accommodate wind on the ground have added nothing to speak of except large capital investments, high maintenance costs and grief to airline flight personnel.

The idea of the single runway airport has been considered more than once, but it has been found that the open single runway alone does not solve the problem, since cross-wind take-off and landing still remain troublesome.

For a long time we operated out of flying fields, then out of air fields, and now out of airports, and today we are operating even the high flying, long range giants out of airports. It seems logical that truly strato-cruising aircraft should be flown in and out of Strato-Ports—not because of the play on words, but because of the essential characteristics of the Strato-Port which will provide safer and more economical operation not for strato-cruisers alone, but for all types of aircraft.

The Strato-Port, as I conceive it and as here presented, consists of a single fenced runway.

Before I proceed with my description of the Strato-Port, let me outline briefly some of the shortcomings of present airport design. We can trace back to these shortcomings many engine failures on take-off or in flight. The present airport design is also responsible for limited aircraft payload, for shorter range (particularly for military aircraft), for low flying over populated areas and for disturbing

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AUGUST, 1952

AN EDITORIAL

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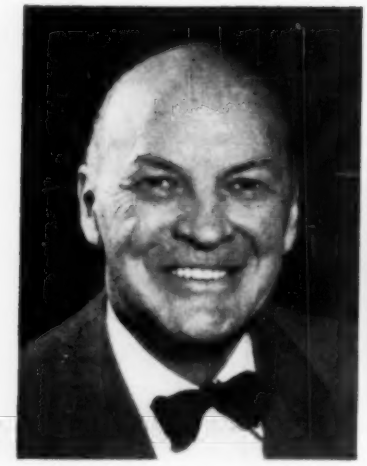

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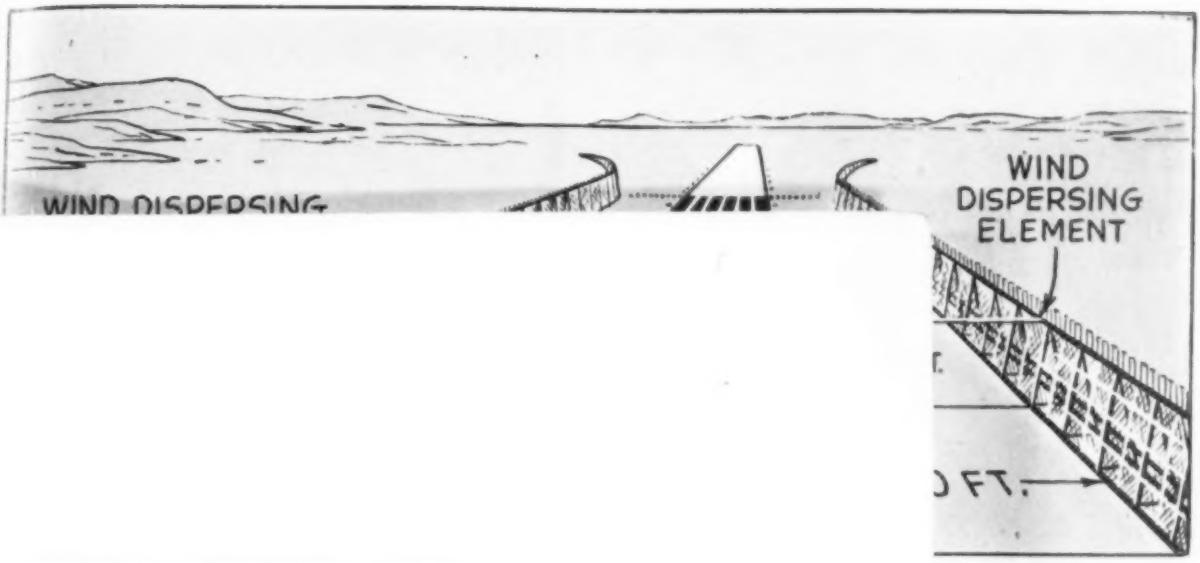
Editor and Publisher



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Assen Jordanoff

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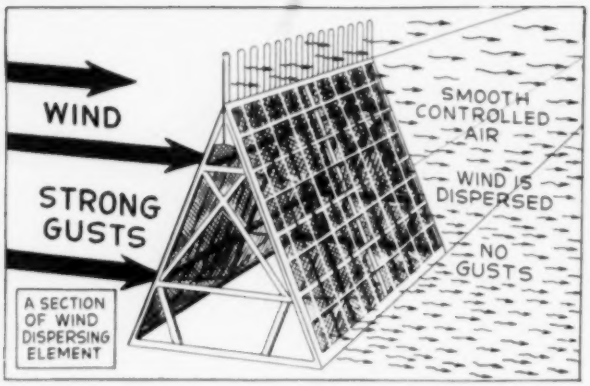

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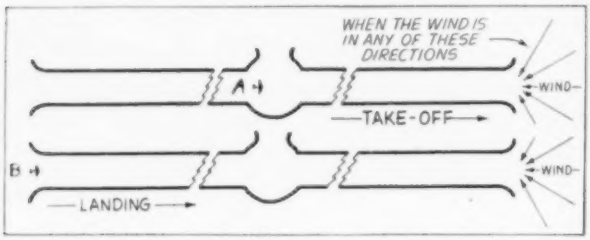

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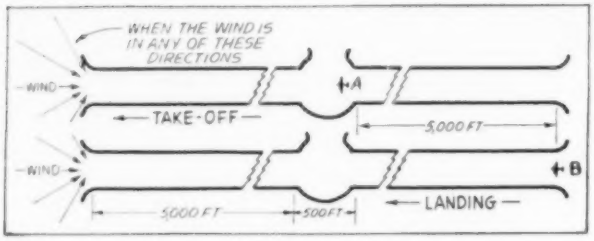

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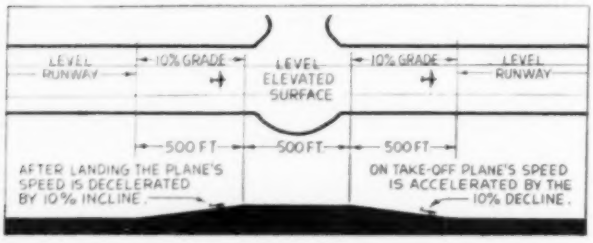

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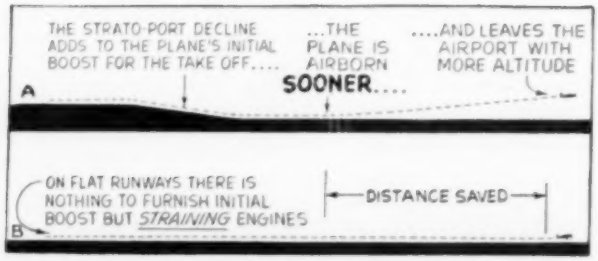
THE STRATO-PORT DECLINE ADDS TO THE PLANE'S INITIAL BOOST FOR THE TAKE OFF....
...THE PLANE IS AIRBORN SOONER....
....AND LEAVES THE AIRPORT WITH MORE ALTITUDE
A
ON FLAT RUNWAYS THERE IS NOTHING TO FURNISH INITIAL BOOST BUT STRAINING ENGINES
DISTANCE SAVED
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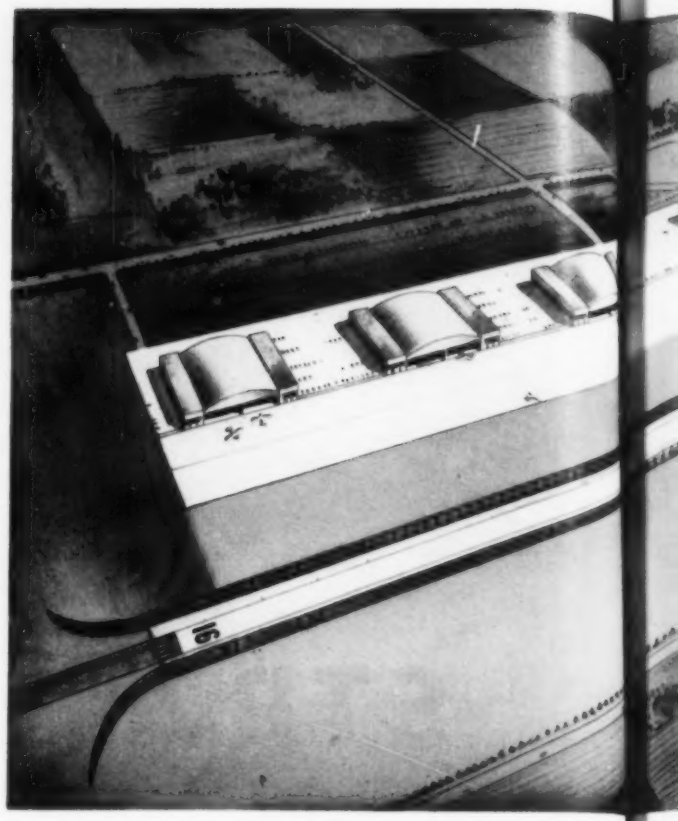
Figure 6



noise. Another disadvantage is the higher block-to-block time, especially on relatively short flights. Lengthy taxiing is extremely costly and the longer take-off run required for high wing-loaded modern transport aircraft calls for longer runways. Flight control tower problems too are aggravated by the present airport design, especially at very large and busy terminals.

On the financial side, the present-day airport requires high initial capital investment because of the great acreage required. Thus high charges accrue against operators for facilities and services which, in turn, mean higher passenger fares and air freight rates.

I might add also that with present multi-runway airport design we have higher direct maintenance costs, particularly during winter months, not to mention the cost involved in occasional forced cancellation of flights or rerouting of incoming planes pending removal of snow.

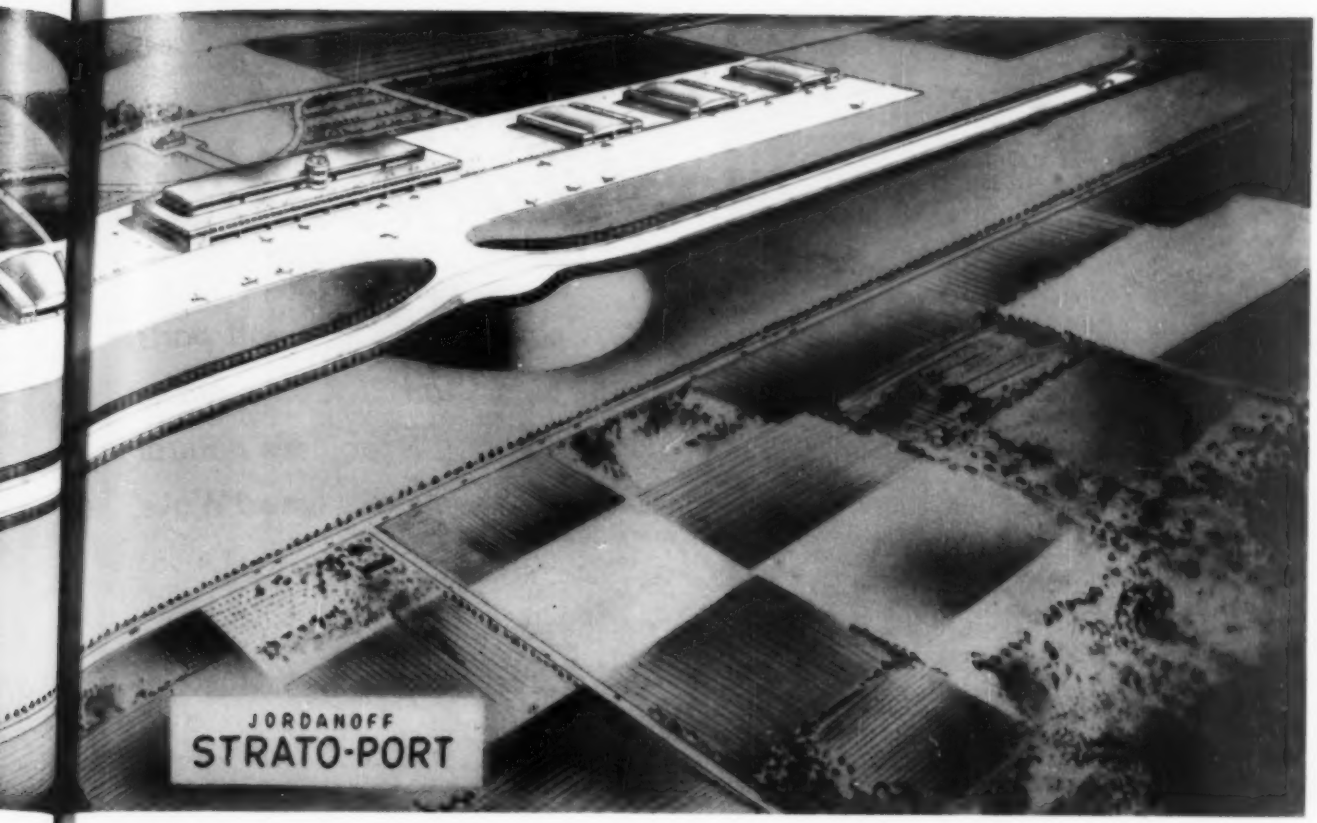
Airports located at high altitudes pose a still greater problem, as for instance, Mexico City, Denver and many others.

Many accidents erroneously attributed to the location of airports are actually caused by the basic present-day airport design which, under certain weather conditions, compels take-off in the direction of populated areas.

Now let us get down to the description of what the Strato-Port can do to help aviation economics and to bring increased safety and improved scheduling to all concerned, including the air-traveling public.

The main illustration here presents a single runway of 10,000 ft. with an elevation in the center. The runway is the usual width of 150 ft., and on each side of the edge of the runway, as shown in Fig. #1, we have two wind dispersing elements that I describe as "wind eaters."

In Fig. #2 you will observe a more detailed sketch of the element. One of the purposes of this "fence" is to



eliminate the cross-wind problem. I must mention that the sketch of the fence construction is a generalized one for purposes of explanation.

The most critical time of landing in high cross-wind is the moment when the aircraft makes contact with the runway. Thus, if we eliminate the cross-wind, we do away with critical landings and, additionally, simplify take-offs.

Let us example the worst possible case, that is, when the wind is blowing at 90° from either side of the runway. As the wind strikes the fence—and this is important to remember—we do not deflect the air mass over the fence. We rather absorb its kinetic energy by chopping it up into small bits—taking the "wind," so to speak, out of the wind—in two stages: once through the outer wall, and a second time through the inner wall. Incidentally, the fence must be designed to withstand the force of an 80-mile-an-hour gale and all gust-loads above that velocity, and should be brittle enough to collapse under the impact of a plane hitting it in a freak accident, without causing serious damage.

Does the air go through the fence? Yes, but by the time it emerges, its fury is extracted.

Since we do not deflect the air, we will not have any serious disturbances within the area surrounded by the two fences. During the process of absorbing the kinetic energy from the wind via the fence, some of the heat of the air will, naturally, be released and the temperature around the fences will rise some 2° to 3° depending on the velocity of the wind. Therefore, what we have done is to turn the kinetic energy of the wind into heat. The air that seeps through the fence will not affect the aircraft on the runway. The area above the fence will have the normal cross-wind condition.

Let us see what happens when the wind is blowing from the right-hand side, as shown in Fig. #3. Under those conditions, the aircraft will take off from point A into the wind and will land from point B also into the wind.

If, however, the wind is blowing from various angles, as shown on the left in Fig. #4, then the take-off will occur from point A and the landing from point B, which is also "business as usual."

If the wind is coming at 90° toward the runway, the take-off and landing direction will be at the discretion of the control tower, depending upon the flight pattern and other factors.

Fig. #5 represents the plan and cross-section of the runway. Remember that all dimensions and percentages of grading are approximate. Planes will always take off from the level elevated surface and land toward it. Reason for the decline is to give the plane an initial take-off boost and thus faster acceleration to flying speed. Upon landing, the plane decelerates faster as it reaches the inclined surface. Such an arrangement will also give better drainage and good braking surface. Some such feature will be almost essential to help solve the take-off and landing problems involved in operating forthcoming jet transport planes.

Fig. #6 illustrates the further importance of the decline during the take-off period. The aircraft starts at the outer end of the flat elevated platform. The decline gives it further boost and the plane is airborne sooner with less than full take-off engine power—it will be airborne still sooner with full power—and leaves the Strato-Port at a higher altitude, since it has been in the climbing sector of the flight for a longer period of time. If the same aircraft with the same gross weight took off from a flat runway from point B, it would run a longer distance before becoming airborne and the engines would have to operate with full boost.

(*Continued on page 63*)

Adventure

Soaring pilots from all parts of the world trek to California to hop a ride in the fabulous natural elevator known as the Sierra Wave.

By BASCOM JONES, Jr.

DARK CLOUDS massed overhead and a sullen curtain of rain moved ominously in over a leaden ocean. Around the tiny California airstrip there was a tense air of waiting.

Suddenly a sleek metal sailplane streaked across the far end of the runway and pulled up into a 360-degree turn to knock off airspeed in preparation for a landing. As the single wheel of the Schweizer 1-23 touched down, the tableau at the airstrip was broken.

Racing against approaching storm, other members of the San Diego-based Associated Glider Clubs of Southern California turned back to their jobs of dis-assembling their sailplanes and loading them aboard trailers. Beside

Glider pilots gather for pre-meet briefing. The site is dismantled Camp Callan, Calif.

with Wind

A youngster (at left) is awed by the masked visage of William S. Ivans, who holds international altitude record for single-place gliders; (center) Gliders wait for a winch-tow to send them into the air at Torrey Pines Gliderport; (right) Betsy Woodward, 23, co-holder of the women's multi-place altitude record, was chosen to take part in the Sierra Wave Project. The Los Angeles girl has been flying power planes and gliders for the past six years.

the control shack at the edge of the runway, contact-starter Jim Fitzhugh watched the Schweitzer nose to a stop. Another day of soaring had ended.

Fitzhugh, rabid soaring enthusiast, was one of those who, in 1947, were responsible for inaugurating the big Pacific Coast Mid-Winter Soaring Championships. Attracting crack airmen from western states, the two-day meet is held annually at the San Diego Club's famed Torrey Pines Gliderport, in late February or early March.

"Soaring is the greatest of sports," Fitzhugh points out, "yet it meets the pocket-book limitations of almost everyone. It's the poor man's chance to compete on equal terms with anyone in aviation."

Germany was first to see the long-range advantages offered by a national glider program. It gave the broadest cross section of her youth a chance to participate in exploring the new frontiers. Schooled in aeronautics, her youth spread abroad in a vast network of civil aviation enterprises. At home, Germany accumulated, through soaring activities, a pilot reserve greater than that of any other nation. When war came, her combat aircraft were manned by crewmen who had been competent pilots long before they ever sat in the cockpit of a Stukka.

The art of soaring breaks down into three specific types—ridge or slope soaring, thermal soaring, and wave soaring. Basically, however, all three types depend upon the plane being flown into currents of air which rise more rapidly than the aircraft sinks.

In the early 1920's, glider pilots found that, if their plane was launched into rising currents caused by the wind striking a cliff or slope and being deflected upward, they could maintain and even gain altitude. As long as the wind held they could cruise back and forth through the area of lift, which broadens out like a giant V at altitude over a ridge. This is fun, but geographically limiting, to the cross-country activities of soaring.

The art really came into its own with the advent of thermal soaring. Thermals are great bubbles of warm air which rise through the cooler air around. With discovery of thermal soaring, pilots were no longer confined to an area limited by the length of a cliff or ridge. Cross-country flight became possible as pilots learned to go from thermal to thermal—spiraling upward in one to gain altitude from which to glide to another. Limited only by their own skill in locating thermals, the sailplane experts of today make overland flights of several hundred miles.

Wave soaring, the third specific type of the whole art, was introduced by European airmen in the late 1920's. A wave, in soaring terminology, is a cascade of air which rushes straight up to great altitude, as yet undetermined, on the lee side of mountains.

Granddaddy of all known "waves," the fabulous Sierra Wave, is located near Bishop, Calif. Veteran wave pilots have come from all over the world to climb aboard this fantastic natural elevator and be whisked to altitudes not attainable for any other but the highest-powered military aircraft.

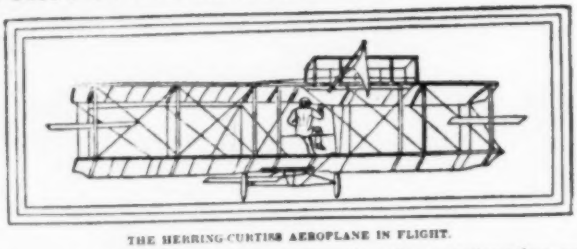
Occasional tales recounted (*Continued on page* 46)

Wyckoff, Church & Partridge

June 27 / 909

ANNOUNCE

The First actual building and selling of Aeroplanes which are practical in flight, and which can be delivered to the purchaser within FORTY DAYS from date of order.



THE HERRING-CURTISS AEROPLANE IN FLIGHT.

¶ We have arranged with the manufacturers for the construction and sale of the

HERRING-CURTISS AEROPLANE,

a machine for air navigation, pronounced by competent authorities to be the most compact, practicable and efficient Aeroplane for the use of the amateur.

OUR FIRST SALE

Within 24 hours from the making of our arrangements with the builders, the FIRST SALE was made to Mr. A. P. Warner, Vice President of the Warner Instrument Co.

¶ The HERRING-CURTISS Aeroplanes are the outcome of the combined thought and skill of the two most prominent and successful scientists in the aviation field, Mr. A. M. Herring and Mr. Glen S. Curtiss. Mr. Herring's work dates back to the very beginning of experiments with heavier-than-air machines. His use of the Bi-Plane antedates the work of all other men who have contributed to the science of aeronautics. Mr. Herring also enjoys the distinction of being the first human being to navigate the air in a self-propelled heavier-than-air machine.

We have established an aviation department, and solicit a hearing from those interested in the purchase of an aeroplane.

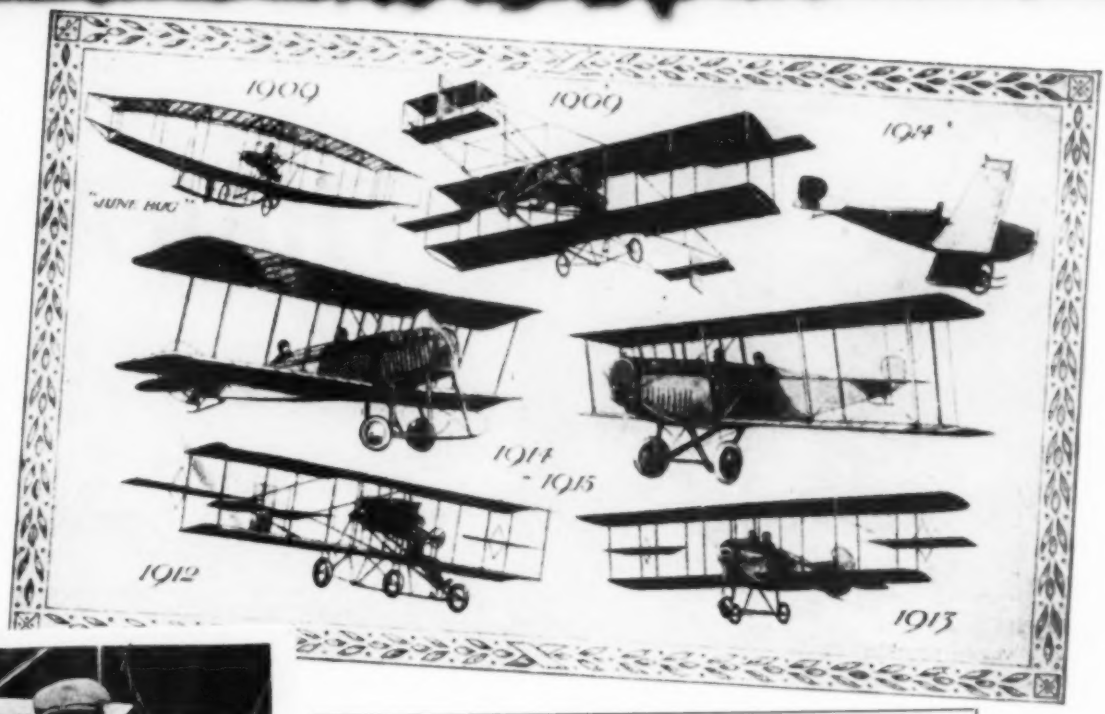
We are prepared to arrange for convincing demonstrations of the utility of the HERRING-CURTISS MACHINE, and to quote prices for early delivery.

Aviation Department,
Wyckoff, Church & Partridge,

1,743 Broadway, at 56th Street.

SUPER SALESMAN '09

Clarence Wyckoff, promoter par excellence, introduced the Aeroplane to Automobile Row.



The memory-stirring glimpse of yesteryear printed here was found by Mrs. Clarence Wyckoff of Ithaca, N. Y., among the papers of her late husband. The editors of FLYING cannot vouch for authenticity of each detail, but they doff their caps to an aggressive salesman and a master story teller.

Glenn Curtiss at Rheims, 1909.

By CLARENCE WYCKOFF

IN JUNE, 1909, I was trying to run the affairs of one of the then older automobile houses on Broadway. Automobile Row was comparatively young. But we didn't know it. In 1905 we had been the first to move from the "Old Row" on 38th Street. At that time practically all of New York City's nine or 10 automobile concerns were located on the short 38th Street block between Broadway and Seventh Avenue.

By 1909 we were old-timers. The cars were almost perfect. In an afternoon's drive you would hardly see more than three or four broken-down cars. Most everybody had already purchased cars and we had begun to wonder what we would take up next.

On this June day that stands out in my memory I was sitting at my desk when the telephone rang. History? Well perhaps.

I removed the receiver and a customer's voice came over the wire. I have forgotten his name.

"I want to buy an airship. Can you sell me one?"

The answer required some quick thinking. In those days an automobile dealer really took care of his customers. It might be an accident or an arrest for speeding at 20 miles an hour. Whatever it was, we had to be ready to get him out of his trouble. If he wanted anything from a cotter pin up we prided ourselves on giving service—quick service. But an airship? It probably was just a josh. My answer was prompt.

"Certainly, but what kind of an airship do you want?"

"What do you mean? Is there more than one kind?"

"Yes. Dirigibles and aeroplanes. We can supply either or both."

"Please explain the difference between the two."

"Well, a dirigible is lighter than air and has a gas bag to hold it up. The aeroplane is heavier than air and depends on its wings and speed to get it off the ground."

"The gas bag sounds dangerous. I guess I'll take the aeroplane."

By this time I had decided that it *was* a josh so I replied, "Do you want a monoplane or a biplane?"

"Please explain how these two differ and which is safer."

My answer wasn't quite accurate, but I was giving him all the information I had at the time. "The monoplane has only one wing and the biplane has two. The biplane is safer."

"All right, I'll take the biplane. When can you deliver and what does it cost?"

"We can deliver in 90 days. If you are interested in the cost you had better not buy. I may have to build it myself and I haven't the least idea what it will cost." I thought that would stop him, but it didn't.

"O.K. I'll take it. Send me a contract." He rang off.

My bluff had been called. I sat still for several minutes thinking very hard. In those days every newspaper had an automobile editor and during my conversation over the phone it had occurred to me that possibly somewhere here was the germ of a publicity story that would be accepted by the automobile editors. If I could put it across it might mean a lot of free ad- (*Continued on page 58*)

THAILAND

By WARD VICKERS

THE *USS Cape Esperance*, cruising the South China Sea, swung into the wind and launched 50 unmarked navy blue Grumman *Bearcat* fighters. The *Bearcats* completed their join-up circle over the giant carrier, then headed north toward the independent sovereign of Thailand. Over the coast, they picked up the exotic, temple-studded city of Bangkok.

The control tower at Bangkok International Airport cleared the flight to land. Huge, inter-continental commercial airliners stood by, engines idling impatiently, as the stubby fighters peeled off and dropped to the runway with the precision typical of carrier outfits.

Watching from the far end of the field were 50 young Siamese pilots who were getting their first glimpse of American flyers. More important, they were seeing the planes that would belong to them as soon as they could be taxied to the line and parked. Uncle Sam was presenting Thailand with 50 first-line F8F Grumman *Bearcats*.

Thailand was getting not only the planes, but also a host of technical personnel known as the Military Air Advisory Group (MAAG). This organization was sent to Thailand to teach the Siamese pilots to fly the planes effectively, and to train mechanics, radio and ordnance specialists. The Thai Government was taking on a big problem. Never before had this country known the economic and administrative headaches of keeping a first-rate air force in commission.

MAAG went to work, solving the problems as they came up. The general aim was to train a nucleus around which the Royal Thai Airforce could grow. A 190-hour syllabus was set up. Basic training of 130 hours in the F-6 would get the boys straightened out or eliminated; then they'd try the F8F for 60 hours. Both courses would cover formation flying, gunnery, dive bombing, tactics and cross-country navigation.

For pilot raw material, MAAG had just about the most heterogeneous collection of airmen possible. Some had learned to fly in Europe, some in Australia, and some in

TAKES OFF

Tiny Siam, bordered by strife and Red inroads, builds an air arm. U.S. provides planes and know-how.

Flight-trained in Japan and the United States, Squadron Leader Chalerm Devaveja is an accomplished linguist and fine pilot.

Thailand. The aircraft they had flown ranged from British *Tiger Moths* to Japanese *Zeros*. All the varied backgrounds were put in a mixer and shuffled well for 130 hours. The result was an organized outfit, well grounded in fighter tactics and ready to take on the F8F.

I stood under the operating tent talking to a gold-leafed American instructor. Two divisions of *Bearcats* entered the pattern. Their echelon was tight, and the break-up nicely spaced. "I'm starting to feel proud of these boys," said the major. "There are some real pilots in that lot."

I watched his critical eye follow the planes. He quietly complained that so-and-so was "skidding his turns," or that another unpronounceable name was "dragging it in." Finally the last plane made a flawless approach and greased on with hardly a chirp from the gear.

"That's the squadron leader," the major told me. "He's no slouch. Over 2,200 hours in fighters. Learned to fly in Japan. Flew *Zekes* and *Zeros*."

Later I found out more about the squadron leader, Chalerm Devaveja. He was a top-notch officer as well as a first-class pilot, intelligent looking and sharp in dress. He spoke five languages. During a year in the States he not only learned to speak English perfectly but went through the Air Force Tactical Flight School in Panama City, Fla. Here he picked up the latest word for his fellow pilots back in Siam. Devaveja was an ideal CO in anyone's air force.

After talking with Devaveja for a while, I left him to fill out his schedule board with Chams, Surasaks and Sawongs, instead of the more familiar Jones, Smiths and Petersons.

Alone, I wandered over to a nearby hangar to satisfy my curiosity on the maintenance set-up. Two 8's were sitting inside, looking a bit naked without their cowls. Three Siamese boys were working them over. One spoke fair English and, bowing, bade me good afternoon. I nodded toward the plane.

"What's the matter with this thing?" I asked.

"Cutting out. Mag dlop." (R's beccme l's for the Siamese.)

"Find the trouble?" I continued.

"Yes, sir. Top cylinder get too hot. Clack plug. Lectlicity jump."

"This plane just came in off that last hop, didn't it?" I inquired. The engine was still ginking as she cooled off.

"Yes, sir."

Here indeed was fast trouble shooting. I asked some further questions: "How much mag drop should there be? Why was she running too hot?"

All the replies were well figured out and accurate. I asked further: "What was the clearance for the spark plug gap, exhaust valves, brakes? How much pressure could the hydraulic lines take?"

His answers rated a 4.0. Here was one mech who had read the manual.

"How come you have only 50 per cent availability?" I asked as tactfully as possible. "Have enough men?"

"Got good men, no parts." He went on to explain how they must strip one plane to fly another if baling wire can't solve the problem. "Maybe someday new parts come flom States," he said.

As an American taxpayer, you may be wondering why Uncle Sam is being so big-hearted. Why are we pouring defense dollars into tiny Siam?

Let's take a look at Southeast Asia. It's a real hot potato. Next door, in French Indo-China, the Communists have a grim toe-hold. The French are giving them a hard time, it's true, but the fact remains that Ho Chih Minh's outfit is apt to get full strength Chinese backing at any time. Fresh Red troops are continually stacking up on the border. Communist-backed invasion potential in this area is enormous.

The adjacent Burmese are going through a long series of growing pains. Local squabbles are rampant. The place is wide open, should a covetous neighbor desire to walk in with force.

Southwest of Siam, Malaya is seething with Communist guerrilla operations, a tremendous asset to any invasion-minded nation.

Here sits unprotected Thailand, right in the middle of Red-provoked chaos. The Thais are fiercely independent. Ninety percent are Buddhists, and are quite content with their mode of life.

With every type of belligerence from internal strife to actual war on its borders, Thailand seems the best place in Southeast Asia to establish strength against any possible Korean-type aggression. If a full-scale attack on Southeast Asia were to develop, (*Continued on page 64*)

Bill Piper (left), president of Piper Aircraft Corporation, discourses on the merits of his *Tri-Pacer* at a ranch in Florida.

PIPER

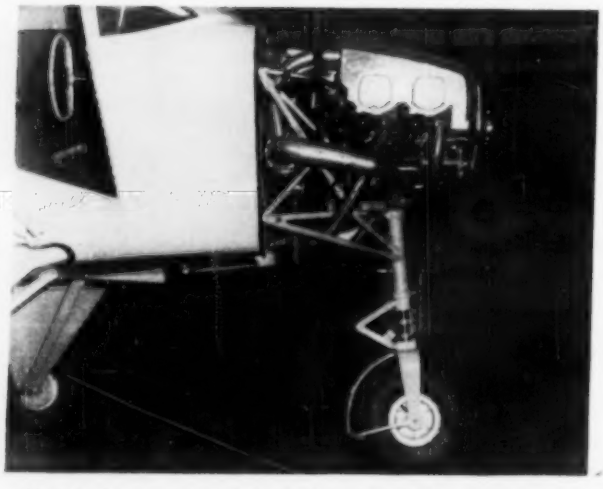
Pacer and Tri-Pacer for 1952

FLYING's CHECK PILOT

EDITOR'S NOTE

This series of articles is planned to help the pilot and prospective plane owner evaluate aircraft now on the market. Only aircraft holding a CAA Type Certificate are flown. The authors evaluate each aircraft through the eyes of the average private pilot who flies an airplane for business or recreation.

By ED HOADLEY

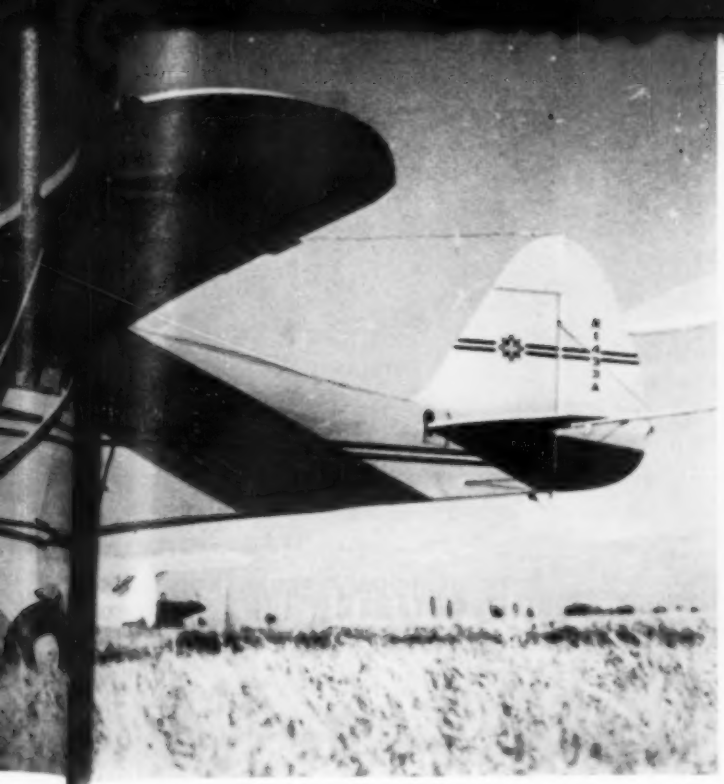


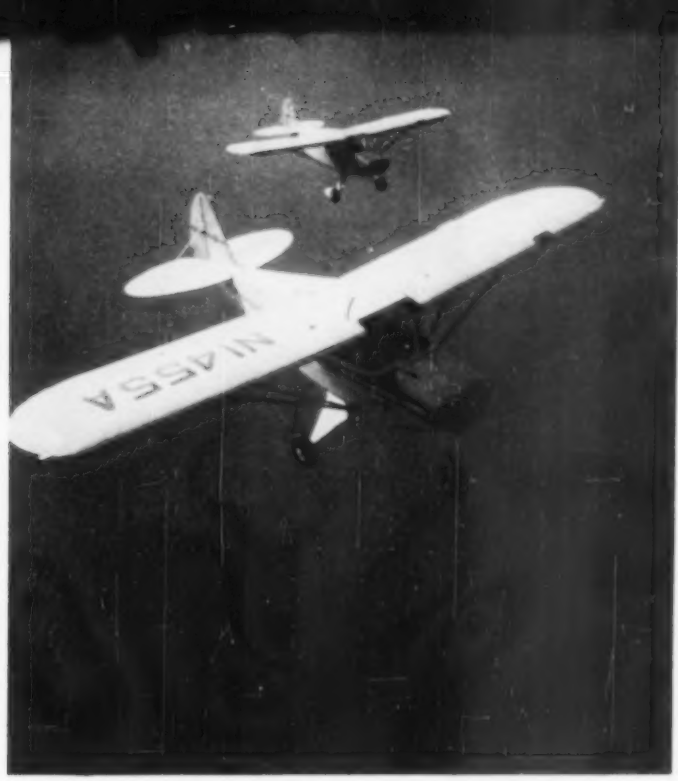
Here is the nose gear of the *Tri-Pacer*. Note the cross-over exhaust system which gives a more effective take-off horsepower.

WHEN Captain Tony Piper was stationed at Fort Sill, Oklahoma, in 1944, I asked him why Piper Aircraft didn't build a faster airplane. He replied that we were in a training stage in aviation and that the J-3 (and Liaison L-4) served the purpose admirably. They were safe, slow and stable. Now, eight years later, we are in what might be called an "air-utility stage." Piper Aircraft has taken notice of this in its series of *Pacers*.

I have just flown four representative aircraft of this line. Three were 1952 *Tri-Pacers* (the PA-22), and one was the standard 1952 *Pacer* (the PA-20). These models are the culmination of years of work on a four-passenger aircraft that combines speed, safety, stability and utility. Starting with the *Clipper*, Piper engineers have re-modified and re-tested until they have what they believe is a "top-dog airplane."

Improvements over the 1951 models boil down to: (1) increase in horsepower—from 125 hp to 135 hp as of early summer; (2) a wider landing gear to improve directional stability; (3) heating system capacity has been doubled, and individual heat controls front and rear installed; (4) a novel fresh air inlet mechanism regulates





The *Tri-Pacer* and *Pacer* are identical except for landing gears.

free air for ventilation; (5) a new type windshield (interchangeable with older models) has been designed which possesses a vertical convex curve which fairs the lines of the plane, strengthens the shield and gets away from attrition cracking on the diagonal tubing; (6) stabilizer crank assembly revamped to reduce load on it; (7) aileron control to rudder ratio changed to reduce control pressures; (8) additional cabin sound-proofing; (9) nose wheel mount beefed up; (10) 150 lbs. more useful load, raising gross weight from 1,800 to 1,950 lbs.

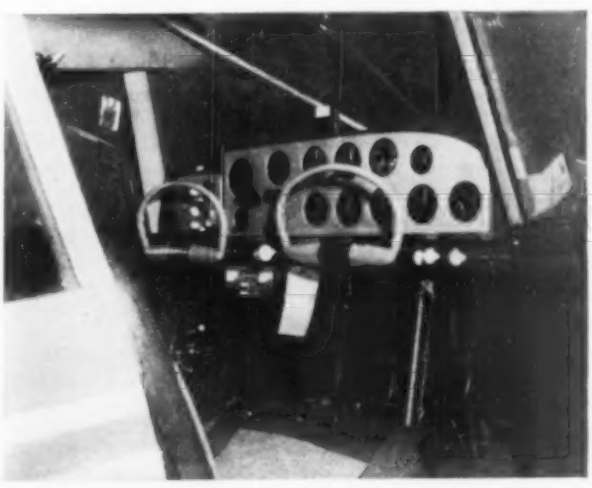
The "duraclad non-flammable" finish has proven satisfactory. Double striping on fin and rudder indicates 1952 model. Interior appointments are styled in modern manner, complete to a cigarette lighter and ashtray. Performance has been increased several miles per hour. Utility has been stressed—both as a cargo job and an ambulance ship. This latter can be arranged in one minute by removing two bolts and sliding the patient in on a Gran breakdown-type stretcher. The patient's head rides to the right rear so he can look out the adequate rear window, while his feet ride comfortably under the deep instrument panel. The doctor (or nurse) rides in the left rear seat.

In its effort to please so many different types of purchasers Piper has at times put out a seemingly bewildering number of models and types. Identification is simplified if one remembers the *Pacer* is the PA-20 with conventional gear. It comes with a 135 hp Lycoming (O-290-D2) four cylinder engine and is called the "135." Previously, *Pacers* with a controllable prop were called the "135." The *Tri-Pacer* is the PA-22. It is identical with the *Pacer* except that it has a tricycle gear. Performance-wise, the CAA gives duplicate performance figures for both the PA-20 and PA-22. Both the *Pacer* and *Tri-Pacer* are rated at over 130 mph at 7,000 feet, 75 per cent power.

It was a little awkward to get into the *Tri-Pacer* for my first flight—like getting into a small four-seater auto. Pete Pearson, one of Piper's test pilots, rode co-pilot with me, and answered questions like "Where's the starter button?" He pointed it out, hidden from the fingers of prying children, under a little box beneath the master switch at your left knee. It's not a bad place to hide either one of them to prevent accidental starting.

I pushed the mixture control to "full rich," switched tanks to see which was fuller (18 gal. each wing), two shots of primer, key switch to "on," fingered the master switch again (there is an auxiliary switch fuse rig), yelled "clear," then felt for the starter button. The engine croaked two times, then settled into a quiet purr. The new sound-proofing job was paying off in quietness.

Taxiing out, I was agreeably surprised with the amount of visibility. You can see the runway about 10 feet in front of you (if you are 5'11"). At Cub Haven Airport, Pa., you can also see the peaks (*Continued on page* 50)



Instrument panel of the *Pacer*. Note Omnihomer radio gear, double toe-brakes, gas selector valve (left wall) and adjustable seats.

Royal Pilot

PRINCE BERNHARD
of the Netherlands

By
GILL
ROBB
WILSON

ANY TIME Prince Bernhard of the Netherlands wants to come back and swap yarns with us American pilots, he will be thrice welcome. His airmanship is as impeccable as his fine sense of democracy. He needs lessons from nobody, afoot or aloft.

While recently in the United States with the adored Juliana, Queen of the Netherlands, Bernhard addressed the annual Society of Automotive Engineers' Aeronautical Section banquet. Surrounded by many of the finest airmen in the world, where any but an expert would have been over his head, His Royal Highness did a bang-up job.

Nor did the 40-year-old Netherlands Prince acquire his 2,000 flying hours in royal comfort. He has soloed 73 different models of airplanes—everything from *Cubs* to jet fighters, bombers and transports. He qualified as a military pilot in the Royal Air Force in 1941 and later in the U.S.A.F. He flew combat missions and North Atlantic ferry flights during the war. When Hitler invaded Holland, the Prince got out and whaled away with a machine gun until he got clipped with one that had his name on it.

Naturally, the Prince has a purpose behind all his aviation activity—instrument rated pilot, Inspector General of the Army (including the Air Force), Director of KLM, and ardent private plane owner.

Holland, once a great seafaring nation, knows her main chance for a happy place in the sun of future world commerce is by way of air transport. What she was on the seven seas, Holland seeks to become on the universal air ocean. Bernhard carries the torch of the Royal Family to that end. A perusal of his log book shows he has already carried it to most of the areas of the earth.

Around Le Bourget Airport in France, the boys still chuckle over the incident of 1950 when Queen Juliana was arriving for an official visit. Instrument conditions prevailed at Le Bourget as the KLM *Convair* carrying Juliana approached the field. To complicate matters, air traffic was heavy and the Tower was having a rough time —understandably nervous at having the Queen stacked topside in the soup.

Things were not working very smoothly, and finally the lad in the Tower gave the Dutch pilot of the Queen's plane quite a fine going-over. Back came the answer from the pilot, meekly repeating the chewing out of the Tower, without mention of the fact that he was having a mite of trouble understanding the accent of the operator. Nobody would have known that Bernhard was flying the *Convair*, and getting the bawling out, if KLM Captain Anton van Ulsen, flying co-pilot to the Prince, had not thought the story too good to keep.

Hans Kosman, our distin- (*Continued on page* 59)

The winning Rensselaer team is shown between contests.

Intercollegiate Air Meet

Richard Harvey of Albany trained his camera on the "line" at Great Barrington Airport during the Intercollegiate Air Meet to win the $25 snapshot award offered by FLYING.

By BETTY RYAN WOLFE

UP IN NEW ENGLAND, where college campuses are almost as numerous as factories and Howard Johnson's, the college students are taking the lead in promoting private flying.

The sixth annual spring air meet of the Association of Northeastern College Flying Clubs attracted more than 5,000 spectators to Great Barrington (Mass.) Airport in the Berkshires. Despite gusty winds, the collegiate flyers put on a colorful two-day show without even a minor mishap.

Forty students representing seven colleges were active participants in the meet. Competitive events included spot landings, bombing, paper strafing and a cross-country race. When the scores were all in, Rensselaer Polytechnic Institute placed first, Syracuse was second and Champlain third, followed by Cornell, Siena, Union and Harvard. Student flyers from Yale, Lafayette, Williams, the University of Vermont and Brown were among the spectators but were not entered in the contests.

Dave Gloss of Syracuse University was the top-scoring individual contestant and winner of the trophy offered by the Aircraft Owners and Pilots Association. Ted Curry, also of Syracuse, was second among the individual scorers.

Eighteen light planes, including a variety of Pipers, Cessnas, Taylorcrafts and Aeroncas, were flown by the collegians in the course of the meet. Many of these planes are owned by the flying clubs of the individual colleges and are purchased and maintained by relatively modest fees charged to club members.

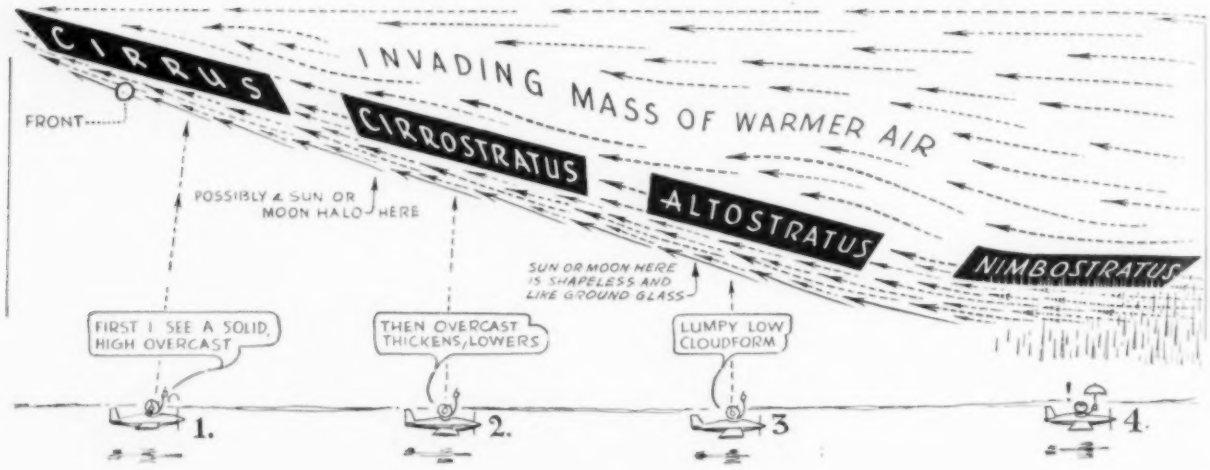
While the competitive events were of first importance to the collegiate flyers, the thousands who jammed the highway leading to the airport were most fascinated by the more spectacular features of the program. A glider demonstration by Dick Ball of Schenectady introduced many in the crowd to motorless flight. Jack Bushway of Turners Falls, Mass., towed Dick aloft with his 450 hp Stearman, then put his plane through its paces in slow rolls, loops and Immelmanns while the glider gained altitude.

Outstanding thrill both afternoons was the arrival of a team of F-51's for a half-hour circus of close-order aerobatics. The 131st Fighter Squadron of the New York Air National Guard from Westfield, Mass., with Lt. Col. John J. Stefanik commanding, and the 139th Fighter Squadron of the N. Y. Air National Guard at Schenectady, commanded by Capt. MacDonald Godfrey, were the participating units.

Much credit for the success of the collegiate air meet goes to the members of Upper Fifteen, the flying club at Siena College, who served as Central Committee for the 1952 meet and will carry on in the same capacity in 1953. With the cooperation of Walter Koladza, who donated the use of Great Barrington Airport for the meet, they executed with showmanship and safety an air show bound to strengthen public acceptance of private flying. END

Leonard J. Frankwitz (right), President of ANECFC and emcee of the Air Meet, joins judges and spectators in sky-scanning.

WEATHER WISDOM



Warm Fronts Have Rainy Backs

By ERIC SLOANE

This is the second of a "Weather Wisdom" series suggested by the manuscript of Eric Sloane's Weather Book, to be published shortly by Duell, Sloan and Pearce—Little, Brown.

ABOVE, from cirrus to rain, you see the sequence of a warm front storm. Because it proceeds with a slanted prow, the first part (clouds) flows overhead for a long while before the lower part of the slant's front reaches you.

This gives quite a long range warning to the weather observer. A few stray cirrus mare's tails mean very little; in fact, they are usually a good fair weather sign. When the whole sky becomes webby with cirrus, that's the tip. A warm front is on its way.

When a mass of warm air starts on the march, it doesn't look the way the meteorology textbooks show you. They don't mean to misrepresent, but to show a true 200 to 1 slant (for one inch height), they would need a page over 16 feet wide!

On the opposite page, that diagram on an angle is probably the nearest to a true warm front sketch that you have ever beheld. As you can see, the angle is almost imperceptible, but even this is an exaggeration. Weather students have often looked up at warm front clouds and claimed to be able to see the warm front slant; but a slant that reached from New York to Chicago and wasn't steep enough for an automobile to roll down, certainly could not be noticeable.

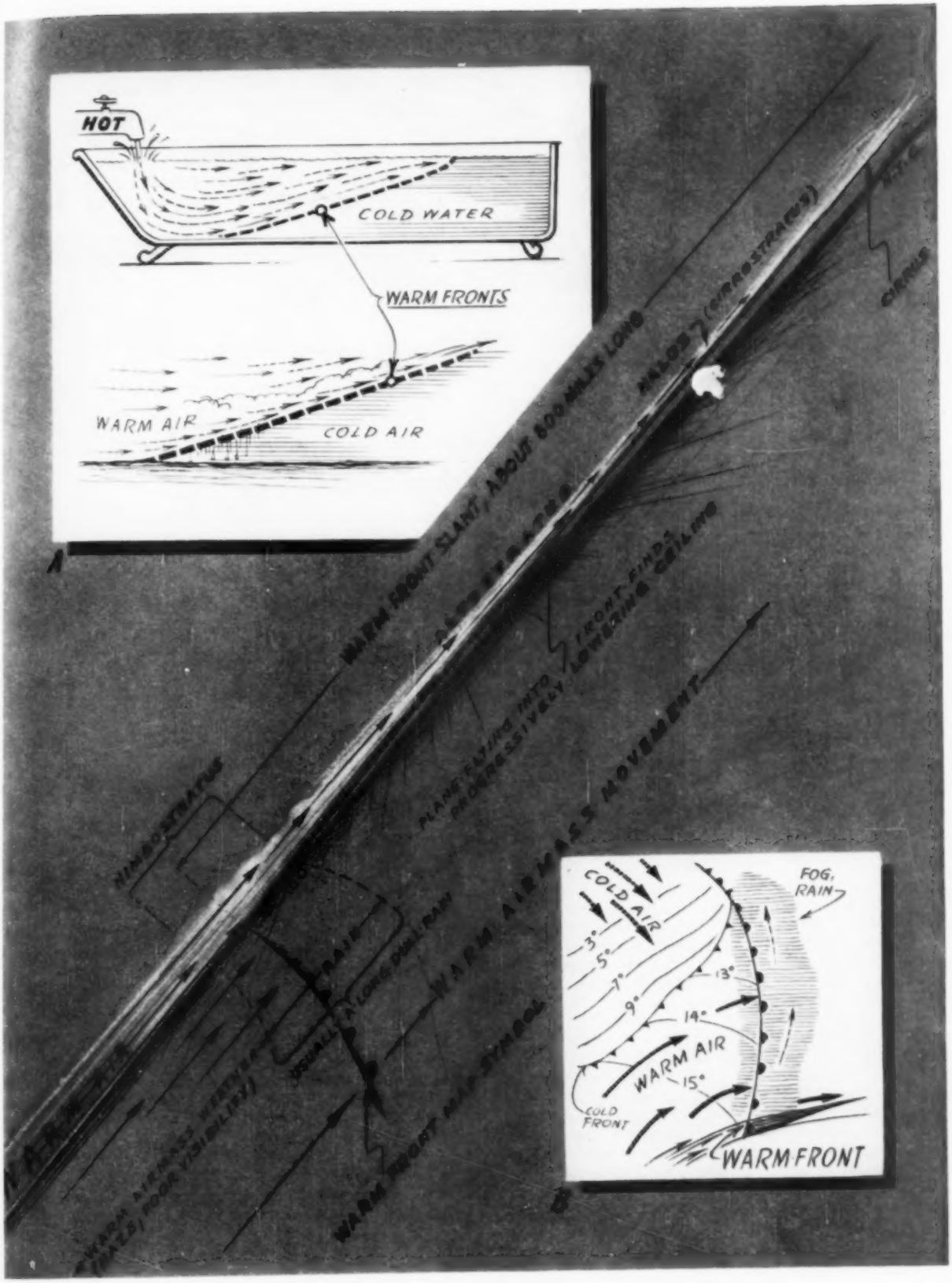
The sketch (A) shows the anatomy of a warm front—how warm water and warm air both proceed in a forward-leaning manner. The dotted lines represent the fronts.

Sketch (B) shows a maplike plan of a warm front with a cold front chasing it. The two wind arrows that run through the fog are running *beneath* the warm front slant, at about right angles to the flow of warm air and cirrostratus above. In other words, the wind before this storm is blowing south, but, as soon as the warm front lowers and drags past, the winds will change to southwest.

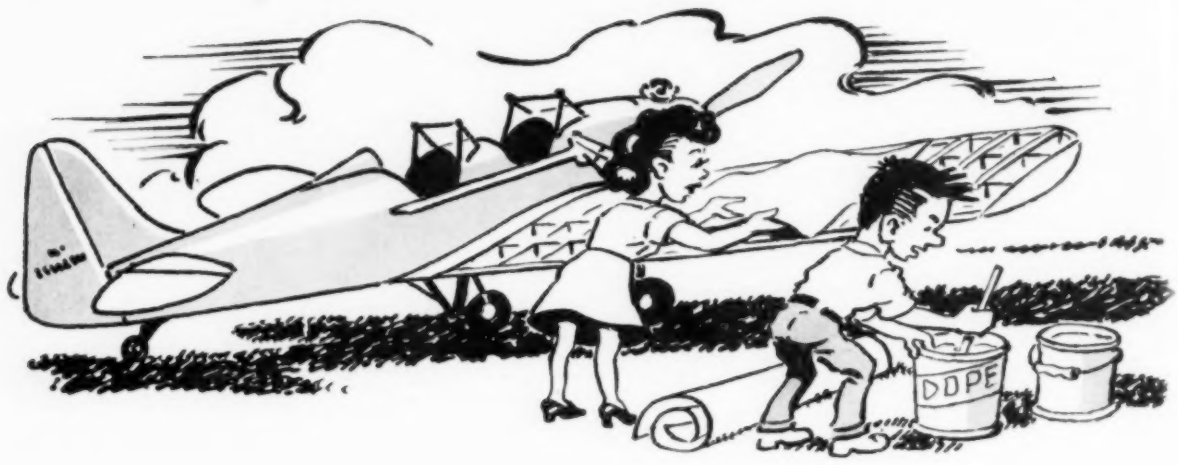
Notice the typical warm front as it swings up from the south and the typical cold front swinging down from the north. The cold front is catching up to the warm air because the average warm front is slower-going.

A fellow flying into a warm front is asking for many kinds of trouble. First, he will encounter lowering ceilings; he is also heading into rain. After he has passed the front and is in the mass of warm air, the visibility is likely to be poor and the cloudform remains stratus and foggy.

The main perplexity from the warm front will be from its immensity. Whereas you can see the division line of a cold front and it can be flown through and passed, the warm front is like an enveloping (*Continued on page* 61)



The Anatomy of a Slow Moving Warm Front



Perseverance and endless patience are essential when an air-minded couple decides to

Re-cover That Wing

By FLORENCE M. WHITCOMB

HERE'S A BLOW by blow account of how we re-covered the wings of our Ryan PT-22.

ROUND ONE

Removed the parts to be re-covered from the plane.

ROUND TWO

Took the old cover off. We didn't yank it off, as we wanted the frame intact for the new cover. We loosened the tape which covers the rib fastening with a pen-knife, stripped the tape off. Underneath were rows and rows of screws. Each of these had to be backed out by hand. Then the old covering could be lifted off in one piece. (If there isn't another wing like the one you want to work on around, you'd best hang onto the old cover for a pattern in the placing of grommets, etc.)

We were now down to the frame. This was carefully dusted and cleaned. A few minor repairs were necessary and were done. The wooden spars needed sanding and revarnishing. New connecting wires were needed. Exposed parts of the frame were chromated to insure against rusting. All old fabric and dope were removed from connection spaces.

A certified A and B mechanic passed on the condition of the frame before we started the actual re-covering. This was a necessary step in the re-certification of the finished product.

ROUND THREE

We made a blanket of airplane fabric (grade A material) large enough to cover the framework without skimping. Three strips, each long enough to encircle the wing, were sewn together with felled seams running parallel with the ribs. In making the felled seams the following procedure was followed. (There are other ways to make felled seams.) Two strips of cloth are laid one atop the other so that the lower one is about three-quarters of an inch wider than the other. Stitch about one-fourth inch from the narrower edge. Lay the two pieces out flat with the wide edge up. Fold the wide edge under and stitch. See diagrams 1 and 2. This was done with an ordinary sewing machine, but with extra strong thread.

Having made the blanket, it was spread smoothly over the framework, the top side of the blanket fastened to the trailing edge with pins. (We used safety pins. T-pins are handier.) The blanket was then drawn around the wing as firmly and evenly as possible. The under side was trimmed to approximately the right contour, folded back about one-half inch, and pinned to the upper layer. Then the edges were drawn together with a baseball stitched seam. The baseball stitch was done with a curved needle (from an upholstery shop) and linen thread (fish line from a sporting goods store). The stitch is easy enough after one gets the hang of it. The main thing to remember is always to bring the needle *out* through the cloth each time you insert it. See diagrams 3 and 4. Six stitches to an inch make a good firm seam. (And teach you patience.)

Projections, such as connection brackets, had to be allowed for so that small holes were cut in the fabric for these. Then the ends of the fabric were drawn closed, firmly, by turning back about an inch on either side, i.e. upper and lower, and the two edges sewed together with that baseball stitch. The out-end seam was made directly over the curve of the frame. The inner-end seam was made in the center of the end. No wrinkles.

Shrinking the fabric was done by sprinkling liberally, rubbing the water in *gently*, and allowing the whole to dry thoroughly.

ROUND FOUR

Doped, by hand. (We used butyrate dope throughout. There are two types of dope, butyrate and nitrate. Butyrate can be applied over nitrate, but nitrate should not be applied over butyrate, so they say. Each type has its own type of thinner, too.)

Note: NO SMOKING IN THE DOPE ROOM.

We mixed approximately one part thinner to four parts of dope in a gallon pail. This proportion varies according to the temperature (60° to 90° are the best temperatures at which to work). The dope mixture should flow on easily. "Just like painting a barn door," making sure to get all of the surface thoroughly covered. The upper side should be dry before turning the wing, as tacky dope will invariably pick up foreign matter. I discovered this to my sorrow. So take warning: IT IS EASIER TO KEEP CLEAN THAN TO TRY TO REMOVE DIRT, GREASE, ETC. Brush hairs, dust particles, etc. were removed before the dope got dry.

A breather while the first coat of dope dried thoroughly.

Dope which was held over from yesterday in an open bucket got a skin all over the top so *all* the skin had to be skimmed off and a bit more thinner added to replace what had evaporated. On attacking the problem the second time, the fabric seemed quite slack. It tightened up when the dope got set.

Up to this point in the bout we were more or less sparring to gain confidence. Now we were set to win.

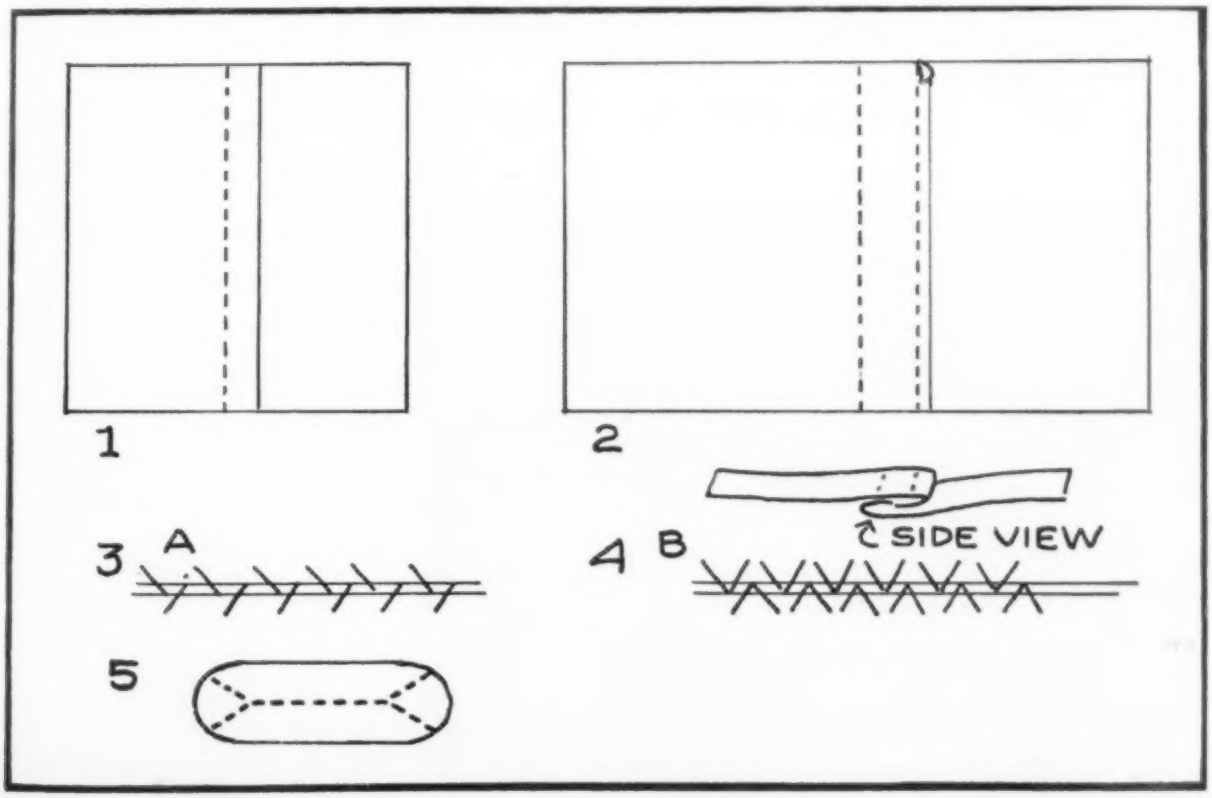
ROUND FIVE

Fastened the fabric to the framework. First, holes were punched with a sharp instrument, a darning needle or awl. Then a pencil mark was made at right angles to the rib, from each hole. Next came the rib reinforcing tape. This was measured along the rib from near the leading edge to the trailing edge, and laid in place. Then came those screws again! This time they went in, through the reinforcing tape-fabric and frame. Haste makes waste. I had to stop and put a patch over a slipping screw-driver hole. Patches were cut with pinking scissors and stuck on with a small dab of dope.

Saturating the reinforcing tape with dope was the next job. That was easy. Then a breather while it dried. Another saturating coat of dope on that tape! Another breather while it dried. (There are probably other ways to beat that puffing of the finishing tape when it is applied which are as good or better.)

Finishing tape was tackled next. Strips measured the full distance around the ribs of the wing were laid from the trailing edge along over the reinforcing tape, over the leading edge and long enough to complete the circuit. Each strip was doped in place on the upper side of the wing, rubbing it down carefully with the fingers to get all the air from under it and make it lie *flat* on the wing. (The dope doesn't damage the hands. It peels off or comes off with a washing in thinner.) *All* seams had to be covered with this finishing tape. Then (*Continued on page* 52)

DIAGRAM: *One* and *Two* show steps in making a felled seam. First, lay two pieces of fabric, one on top of the other, letting one lie ¾" beyond the other. Stitch on dotted line. In the second step, lay the joined pieces out flat and fold the protruding edge inside. Stitch on the second dotted line. The side view shows the edge effect, but the seam should be as flat as possible. *Three* and *Four* show the baseball stitch. Knot the end of the thread and start from the inside of the fabric (Point A). Dip needle inside for each stitch; pull thread taut each time. To further strengthen the seam, reverse the process (Point B), still bringing needle from inside the fabric. *Five*—in cutting holes for connections, slice the covering fabric on the dotted line pattern over each hole. There is adequate fabric to turn inside.



Defense of the Homeland

By C. L. HAMILTON

Alaskan radar screens scan northern skies 24 hours every day.

GOC volunteers in Bridgeport, Conn., have a well-equipped observation post.

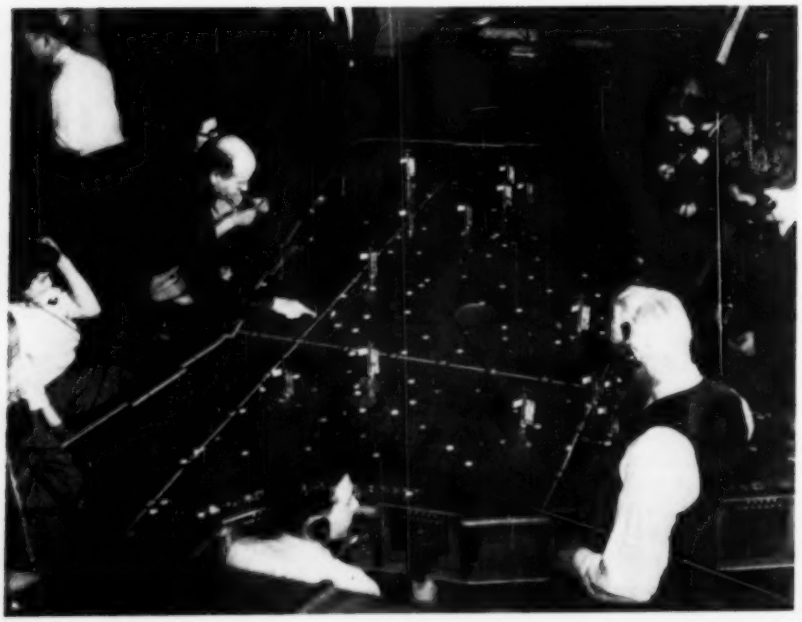
DEFENSE of the homeland—the United States—is primarily an Air Force responsibility. To defend an area of more than 3,000,000 square miles from the high speed, long range bombers of the Russian Air Force is a gigantic undertaking. The task is so tremendous and so radical that it calls for a new principle in the doctrine of American air power.

During the last war an air defense network was maintained in the United States but the possibility of enemy air attack was comparatively remote. World War II Axis planes did not have the range and weapons essential to effective air attack on American cities. Today one bomber, delivering one atomic bomb to its target, can wreck more havoc than a thousand-plane raid of the last war.

Strangely enough, while generally understood, this fact evidently has not as yet impacted upon the consciousness of the average American civilian. It is high time the civilian took a long, hard look at his sitting-duck situation.

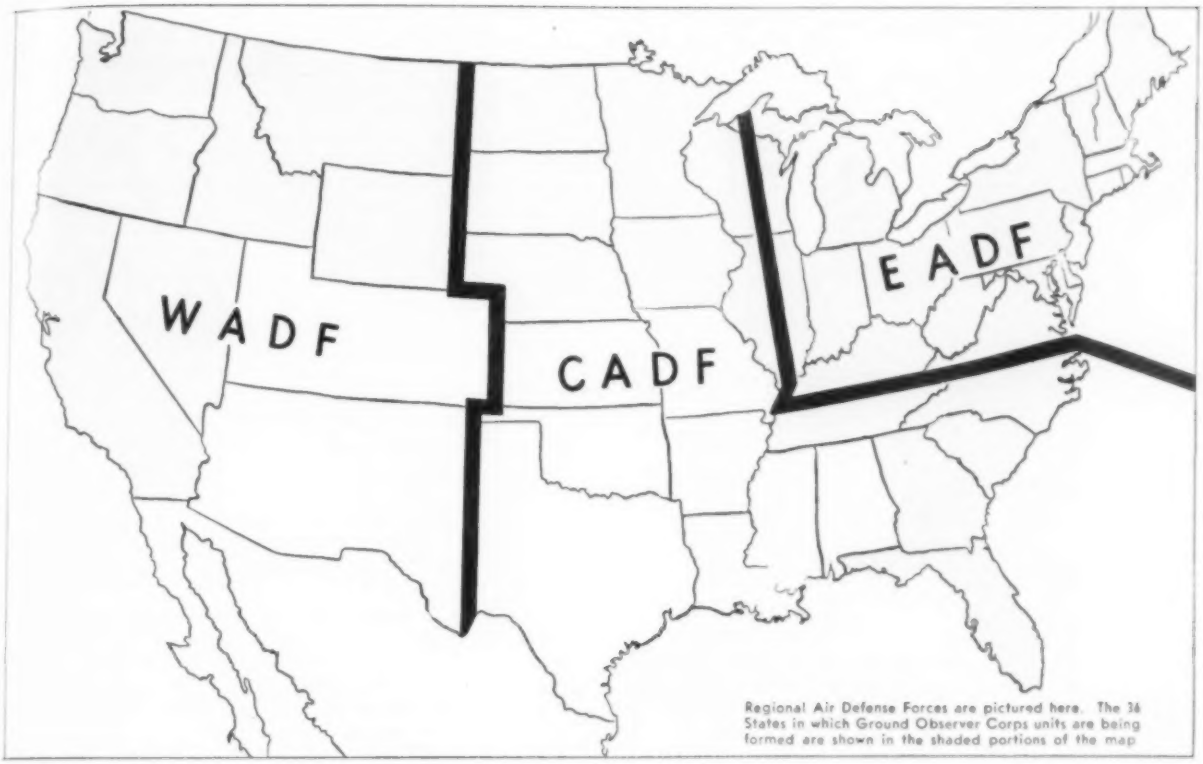
To see his position clearly, he must first understand the basic concepts of air power employment.

Too many Americans believe that air power is simply the largest number of the best planes and pilots their tax dollars will buy. They should remember that Germany



The White Plains Filter Center (left) receives and plots reports from hundreds of posts.

The Bridgeport, Conn., post (below) has a lofty vantage point atop a modern bank.



Regional Air Defense Forces are pictured here. The 36 States in which Ground Observer Corps units are being formed are shown in the shaded portions of the map

and Japan had more than the Allies of some of the finest planes and pilots the world has ever produced. Fatal weakness of the Axis was in the doctrine of its air power employment.

In the United States we have had a three-fold air power doctrine: (1) destruction of the enemy's war making power by long range strategic bombardment of its industrial arsenal; (2) isolation of the battlefield by interdiction of transportation and communications; and (3) tactical air support of ground operations.

Only one of these principles can be used in defending the United States from enemy air attack—the first—long range strategic bombardment. So far, it is believed the threat of American atomic raids on Russian industry has held the line against all-out aggression. So far, it is believed Russia is not ready to risk such terrible punishment.

The day the Kremlin decides to gamble on its chance to survive our retaliatory atomic blows will be the day our Air Force must defend the United States homeland from atomic air attack.

This is the task which calls for a fourth principle of air power employment.

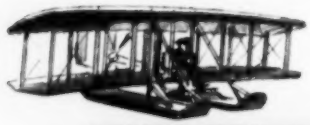
To warn and to intercept. These are the elements of our fourth principle. They sound simple. Yet the complexity of their installation and the scope of their operation makes description difficult.

To command the warning and interception network, the Air Force has established the Air Defense Command. With headquarters at Colorado Springs, Colo., ADC in turn commands three regional units: Eastern Air Defense Force with headquarters at Newburgh, N. Y.; Central Air Defense Force headquartering at Kansas City, Mo., and Western Air Defense Force headquartering at San Francisco, Cal. In turn, each Air Defense Force is divided into numbered Air Divisions.

Warning starts across the arctic wastes of Alaska, Canada and Greenland where radar stations sweep the sky with electronic waves night and day. It continues down each coast in the oceans and seas surrounding the United States and Canada where radar picket-boats scan the skies. It comes inland to radar stations throughout the homeland itself.

Yet even if the radar network could sweep every mile of sky between Russia and our homes, it could not guarantee detection of approaching ene- (*Continued on page* 48)

The observation post at Port Jervis, N. Y., provides unobstructed view.



1912

1952

Dean of Private Pilots?

By The FLYING Staff

IN MAY, 1952, Luis deFlorez, Rear Admiral, USNR, winner of the Collier Trophy, scientist, engineer, airman, celebrated his fortieth anniversary as a pilot.

Probably the last man on earth to make claim of records for himself, modest Luis deFlorez, is none the less one of the most notable airmen of aviation history.

DeFlorez began to fly in 1912 as a result of study for his graduation thesis at Massachusetts Institute of Technology. The thesis was based on measurement of thrust in flight of propellers on a Wright Seaplane. Alfred de Forrest, later a Professor at M.I.T., and the inventor of Magnaflux, was his partner. Together they made what is believed to be the first scientific test of an airplane in flight.

From this initiation into the air, deFlorez continued with Burgess and took his pay in flying time. In part, his duties were supervision of all engine work and maintenance of the Marine Railway. He also did the drafting for Burgess. Flying in those days was largely confined to the dawn hours to avoid winds. To the few whose memory can go back to the launching of a seaplane while standing waist-deep in New England Coastal waters, nothing again can ever seem cold.

The same few will shiver likewise in remembering that the starting of the Wright engine was accomplished by sloshing a cupful of gasoline over the cylinder heads and lighting it to warm up the intake system.

Finding food a necessity from time to time, Mrs. deFlorez' son had to work at his profession of chemical engineering—a necessity which injected intermissions into the aviation activities of Luis. However, came the first World War and deFlorez, along with Jerome Hunsaker and a handful of others, was set to start what later became the Naval Bureau of Aeronautics.

Broke at the end of the war, deFlorez dug again into the field of chemical engineering and came up with enough lucre to become a personal plane owner. A fleet of *Fledgelings*, *Travelairs*, Fairchilds and Wacos gave high satisfaction over the next few years. From those days until the present deFlorez has always owned some type of aircraft and continued flying as a private pilot and as a Naval aviator.

That the salty scientist started to fly early and continues today with unabated enthusiasm is not more remarkable than the fact that he has flown almost everything in the line of airplanes that has come along.

Old friends smiled to themselves when the jets hit the service line of the Navy, but Admiral Luis took to the "hot tails" like a sailor to shore leave. And just to make sure that his pilot talents were still versatile he also became a qualified helicopter pilot.

When World War II made airman training a critical national problem, the pilot experience of deFlorez, with his scientific approach to the art of flying, made him a key figure in the defeat of the Axis. For his development of special training devices he won the Collier Trophy, highest over-all recognition that can come to an American airman. Only a scientist with an intimate knowledge of men as well as of machines could have accomplished such a development.

The deFlorez pilot log is so extensive and varied that an accurate accounting of aircraft flown is probably impossible. That the little Admiral has checked out on a minimum of 83 different types can be determined. These range from the Witteman glider in 1912 to the Piasecki helicopter in 1951. They include land and sea planes, single and multi-engine planes, flying boats, monoplanes, bi-planes, tri-planes, tractors, pushers, single and multiple rotor'copters, foreign planes as well as domestic, fighters, bombers, transports, and an infinite array of personal planes, many of which deFlorez has personally owned.

Readers who pride themselves on a knowledge of aircraft types may profitably scan some of the following names of planes flown by deFlorez.

How many ever heard of a Dunn, a Curtis *Triplane*, a *Mercury*, a Berliner Joyce, a Kreider Reisner, an *Aristocrat*, an *Airbus*? More familiar will be such types as the Farman, *Fledgeling*, Loening, Standard, *Bird*, *Robin*, *Travelair*, *Moth*, Laird, Fleet, Buhl *Pup*, *Curtis Jr.*, OX Waco, Fairchild I, and II, Savoia Marchetti, and Klem.

Naval aviators, who imagine they have been around, might test their range of experience on a few of these types—N.9, J.N.6, H.S.1, N.C.1, F.5L, N.3N., S., F. 4B., S.B. 2U., F.3F.—to call up the ghosts of a mere handful which have preceded the sleek modern stable.

To the writer, the flying career of Luis deFlorez appears to symbolize a philosophy which will bear study in these days. His catholicity of interest—equally devoted to civil and military aviation—has refused to make artificial distinctions. As a private pilot he has consistently put himself in the line of military experience. As a Navy Admiral he has been just as much interested in light planes as in dive bombers. Nothing in aviation has been too big or too little to win his devotion. His comradeship has been as available to the pilot in the *Cub* as to the ace in the *Phantom*. He has spent more money in private ownership and flying than he has earned in military service.

Those in military aviation who look down their noses at private flying and, those in private flying who disclaim any interest in military aviation, (*Continued on page* 44)

BILL HAS IDEAS

By CHRIS COLE
Arizona Daily Star, Tucson

A live-wire former railroader helps Arizona aviation stay in the black.

Another profitable venture is in the offing as Bill Thomas (left), owner of Mission Flying School, confers with Chuck Broman, assistant manager of Tucson Airport.

ARIZONANS are watching, and cheering, the ideas of 45-year-old William F. Thomas, railroad fireman, who invaded Tucson aviation less than a year ago by purchase of the Mission Flying School at Municipal Airport. Bill's fresh approach to the school problem has won him state-wide recognition.

Says R. W. (Bob) Schmidt, Manager of Tucson's Airport Authority, "This greenhorn railroader with fresh ideas has done more for the local aviation picture than any other man in the state."

During the recent blood-donor drive Thomas offered a free plane ride to anyone giving a pint of blood to the local Red Cross. Anyone unable to give blood could get the ride by a $5 gift to the YMCA building fund, a civic project stymied for lack of cash.

The offer, advertised by press and radio, brought 139 pints of blood and a tidy sum to the YMCA fund.

On the day of the affair more than 500 people visited Bill's school, which was smartly decorated and had on display the new Thomas line of Cessna planes. Several pretty girls modeled clothes designed for air travel. Free refreshments were served to all.

Out of this one event Thomas got three new students and a hot prospect for a Cessna. He had made advance arrangements for Frontier Airlines to haul the free riders in one of their DC-3's at their own expense for the good publicity it gave Frontier. Everybody got something out of the project.

Another idea of the canny railroader's has been that of a used-car lot in connection with his school. Car owners thinking of buying a plane find a warm reception at Mission School. So far Bill has only three trade-ins in his car lot but they represent profitable plane sales.

A radio program, begun last January, has become a popular Friday night feature for Tucson. Thomas doesn't pose as an aviation expert but interviews local airmen and visiting celebrities to find answers to the questions sent to him by listeners.

Radio listeners, including non-flyers, are invited to attend Mission ground school free of tuition. Bill claims the free guests do not increase school costs and that his instructors like the larger audiences. Six new flying students have been produced from the free ground instruction.

The reputation already achieved by Thomas has resulted in his election as Commander of the local Civil Air Patrol Squadron. Already his Squadron has located three planes cracked-up in the mountains. Effective work of this kind takes time and effort but it gives people confidence in Bill.

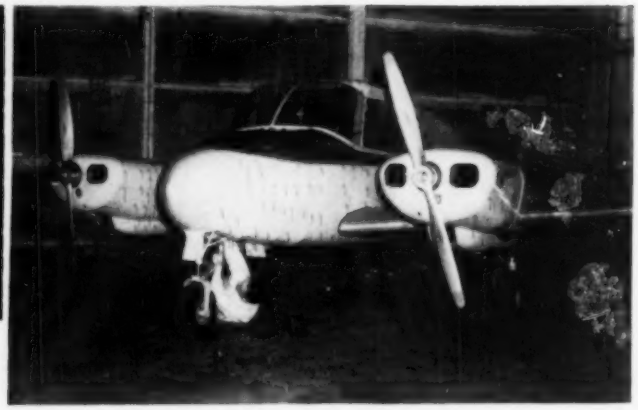
One of Mission School's favorite ways to promote local passenger hopping is via an advertising coupon for a free ride. Bill has given away 5,000 coupons to date and made money thereby.

Thomas explains it this way, "People don't like to ride alone. The coupon holder usually comes for his or her ride accompanied by friends and members of the family. They willingly pay for their seat. For every free coupon ride, I have sold simultaneous rides to two other people."

Bill explains that his ideas are based on the theory of benefiting everyone who participates—himself, but not himself alone. "Nobody goes very far by himself," Thomas avows, and 275-pound Bob Schmidt pats the ex-railroader pridefully on the back and watches Bill's bank balance grow. Thomas himself hefts a good 230 pounds, so the two of them comprise considerable man. END

The new control tower at New York's Idlewild Airport nears completion. The enclosed column contains the stairway and elevator leading to offices and tower.

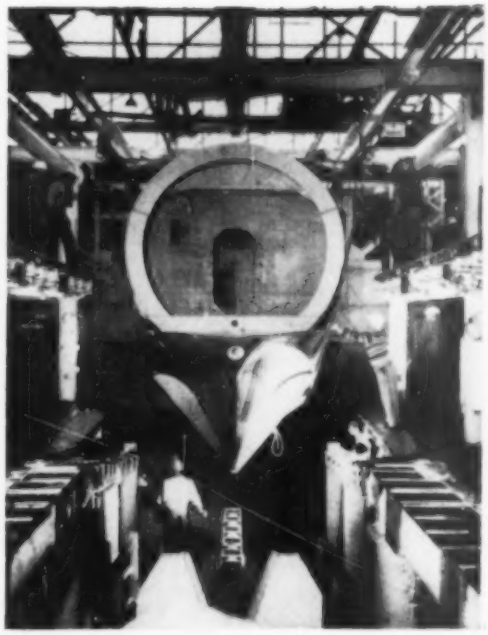
HAVE YOU SEEN?



This unusual photograph, taken in the Lock Haven hangar, shows the *Twin Stinson* wearing yarns used by engineers to check aerodynamic patterns.

You're face-to-face with the blazing guns of a Republic F *Thunderjet*, shown during a te ing firing-in operation at Fa

Huge new fuel tanks suspended under each wing identify the new Boeing B-47B *Stratojet* bomber. The streamlined tanks, which add to the range of earlier B-47's, are painted gaudily for easy identification in drop tests.



Convair launches the first production nose section of the new R3Y, U.S. Navy turboprop flying boat. The Navy will use the 350-mph R3Y in cargo service.

The formation leader indulges in inverted flight during a precision flying demonstration at the RAF Central Flying School, Gloucestershire. The Gloster *Meteor 7* jet trainer can be flown inverted for only 15 seconds.

Lockheed "family portrait" shows transport aircraft growth in 18 years. Rear to front are the double-deck *Constitution*, *Electra*, Model 14 and *Lodestar*, *Constellation*, and 18-ft. longer *Super Constellation*.

gdale, L. I. The F-84 carries M-3 type 50-caliber machine guns which fire 1,300 rounds per minute.

Unseen and unsung, weather ships are valued allies of transatlantic air travelers.

Atlantic Lifeline

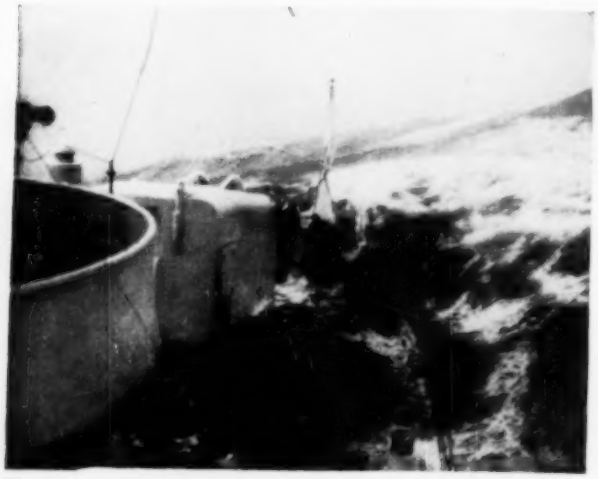
By ROBERT A. PARKE

ANNOUNCEMENT by American flag and foreign airlines of tourist fare flights across the Atlantic is luring vacationists in record numbers to fly to and from Europe this summer. Traffic above the Atlantic in 1952 is double the 1951 volume.

To men who guard the ocean's airways on the weather ships spotted around the North Atlantic, this "Sunday traffic" is satisfying indeed. It implies recognition and confidence in the tough, lonely and often hazardous work they do. The Ocean Weather Station Vessels, as they are formally named, are a major (and largely unacknowledged) factor in transatlantic flying safety.

Sleek and powerful, the Coast Guard Cutter *Spencer* is typical of the vessels assigned to the International Weather Patrol.

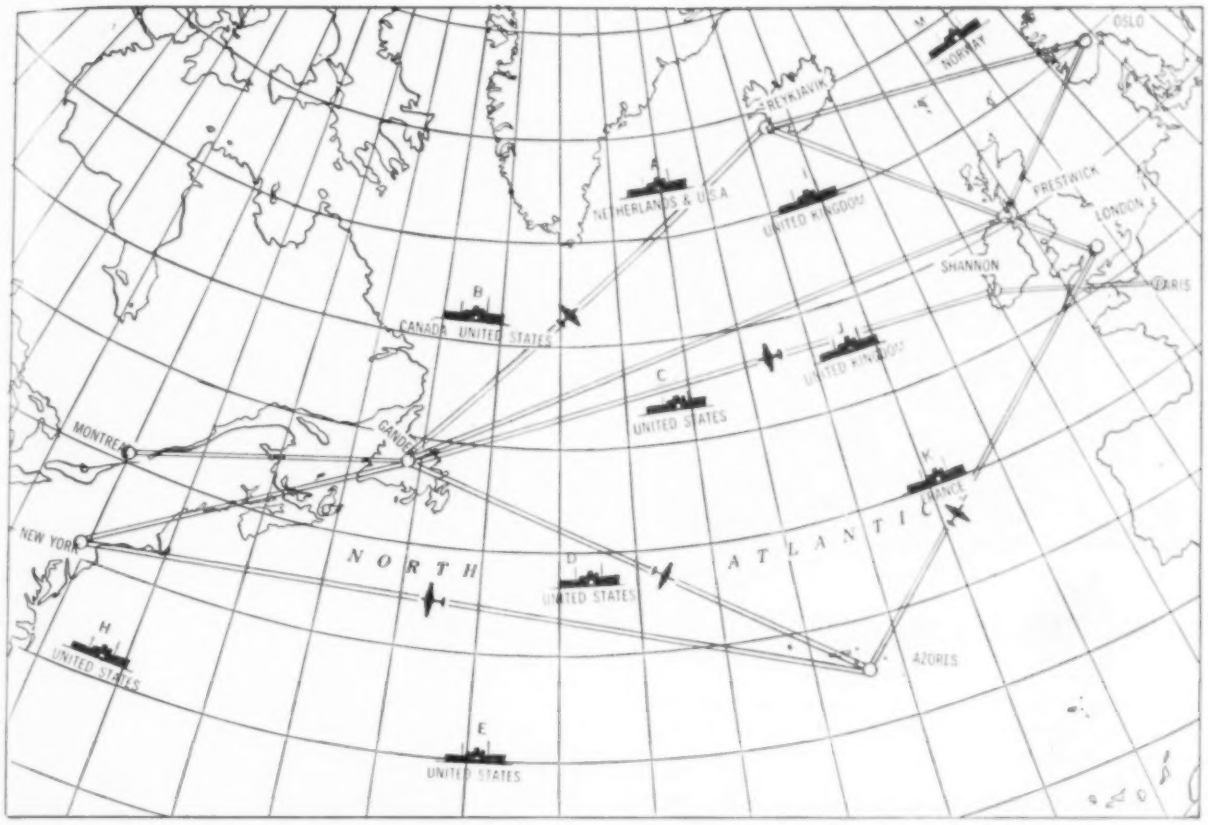
Charged with maintaining its post regardless of weather, the cutter *Pontchartrain* battles mountainous seas on the Atlantic.



To passengers lounging comfortably in luxurious airliners cruising three or four miles above the surface, the 325-foot weather ship is a mere speck on the trackless ocean. The plane's crew, however, is well aware of the ship's powerful radio beacon; aware, also, that the latest weather information may be had for the asking, and that in case of trouble the entire resources of the ship and its experienced crew are theirs.

Since every nation interested in promoting international air travel has a stake in their dependability, all the nations concerned help to maintain the 10 strategically placed Ocean Stations.

The United States has four posts full time and shares responsibility for two more with Canada and the Netherlands. Britain, France and Norway have one full-time station each, and 11 other nations help support the ships. Credit for bringing about this achievement in international cooperation goes to ICAO, the International Civil Aviation



The network of floating weather stations guarding the North and Middle Atlantic is a prime example of international teamwork.

Organization, which first sponsored the project in 1947.

Long before that, however, weather ships made a name for themselves. Back in 1939, when weather information was as valuable to the cause of the democratic nations as bullets or bombs, the U. S. Coast Guard stationed a pair of cutters off Greenland to observe the pressure areas that made Europe's weather.

Later, when American planes started beating a path across the ocean to the battlefront, the value of the surface craft as navigational checkpoints and rescue stations was realized. In 1943, two more ships were added to the patrol, and by 1944 the number had grown to eight. The demands of post-war transatlantic flying established the minimum number of stations, for safety, at the present 10.

The Coast Guard, acting for the United States on the project, uses a fleet of deceptively sleek and fragile-seeming cutters for weather patrol. The slender lines conceal a tough and powerful vessel, rugged enough to stand up under the worst weather the Atlantic can dish out. In the course of a 21-day tour "on Station," the sturdy cutters may have to face 100 knot winds and mountainous seas.

Every foot of available space behind the reinforced hull and superstructure is crammed with stores and gear to make every day on patrol count. Radar and radio equipment jams the space aft of the bridge, and antennae sprout along rigging overhead. Most remaining space above decks is given to the all-important fixtures for weather analysis. With necessary economy of space, quarters for the 140-man crew nestle below.

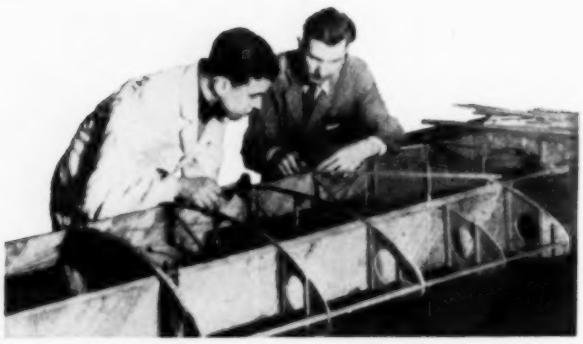
Numbered with the crew are four trained employees of the United States Weather Bureau who make frequent observations of surface and upper air weather. Essential in the latter is the balloon with radar reflector and midget radio attached, known as the radiosonde. As the released balloon is carried aloft, it is radar-tracked to obtain wind velocity, while signals from its radio transmit pressure, temperature and humidity at various altitudes.

Recently, upper air soundings have been taken every six hours, double the usual frequency, to permit full-scale test of pressure pattern flying. The more frequent analysis is necessary to determine exact location and direction of pressure areas. One shortcoming of the pressure pattern system, by which aircraft attempt to ride tailwinds around a pressure center, resulted from overseas airports failing to receive information recent enough to be accurate.

The accuracy of weather predictions, as well as the value of radio beacon signals, is, to a large extent, dependent on the marine navigator's skill in pinpointing the position of his weather ship. A plan taking a bearing on the beacon could be thrown off appreciably if the ship's position were not exactly established on the airman's chart.

Whenever he can, the surface navigator jockeys his ship within five miles of the center of a 10-mile square. Sometimes this is impossible, when heavy seas and gale winds tear at the straining ship, or tugging currents carry it as it churns at reduced speed around its beat.

An ingenious system allows passing planes to locate the weather ship and its guiding beacon anywhere in a 200-mile square around the station. Identical grids on ship and plane are divided into squares, checkerboard fashion. Each row of squares at the top and side of the grid is then lettered. When the Coast Guard (*Continued on page 52*)



"Let 'em have kits!", is one writer's reply to the query, "What has happened to America's youth?"

Let's Give Aviation Back to the People

By CHARLES J. BURTON

LET'S PUT DOWN some aviation grass roots! Now! Unless we do this the topsoil of our youth will continue to be washed away, to fertilize other fields at the expense of aviation and our country.

In the March, 1952, issue of FLYING, the Editor asked, "What Has Happened to America's Youth?" In the same issue, Congressman Henry J. Latham wrote, "Give America's Youth Aviation Education." These are particularly provocative articles. For me, they focused a hitherto general uneasiness. They caused me to search specifically for a solution to the doldrums in which private flying lies becalmed.

What has happened to America's youth? The answer, to my mind, is this: Youth no longer has a personal stake in aviation. Except for the relatively few whose ambitions and capabilities can lead to commercial or military aviation, the youth of America, by and large, has little chance of growing up with airplanes; yet grow up with airplanes it must, if it is to realize aviation's tremendous potential of value and pleasure.

What is the solution? Congressman Latham's recommended educational program is a must, but it does not reach to the core of the problem. Education creates original interest, but interest lags unless there is *personal motivation*. Our real problem is to provide that motivation. This is the missing link.

It was implicit in Mr. Wilson's editorial when he posed the following problems:

a. There were only 600 one- and two-place personal lightplanes produced in this country last year.

b. "The limited finances of youth and adults can purchase less and less flight training due to high costs . . ."

c. ". . . the depopulation of community airports and the increase of hot rods on the highways."

These problems spell out their own answers. The only way to provide personal motivation for flying is to make airplanes really and completely available! We must make them available to those who want to fly, but who are not interested in flying one day per month, only to spend the rest of the month wistfully watching others fly.

In our present economy, the cheap, mass-produced airborne flivver is only a dream. Yet there is a way to put airplanes into the hands of the family—the only place we can really develop roots for private flying. Our aviation industry can do it by producing and selling airplanes in kit form; kits which can be sold at relatively low cost and assembled by individuals at home or in hobby shops. Don't gasp! It isn't as if I had suggested arming the kindergarten with tomahawks. Of course there are limitations to such a plan, but until we adopt a "can-do" attitude we are on a treadmill.

"It satisfies your innate desire to build . . ."

Think first of the positive, constructive results of the plan. Put yourself in the place of a kit buyer (not necessarily a pilot—yet!). How are you affected?

a. It satisfies your innate desire to build, tinker, and create. This need is now diverted to automobiles, boats, etc.—witness the hot rod enthusiasts. This is a real and universal American trait.

b. When the project is completed you have far more interest in your airplane; you know it from inside out. You have learned more about it than you would have learned in years of casual flying.

c. Your interest and knowledge are automatically transmitted to family and neighbors who help you build and maintain the aircraft. What boy is not going to be interested in his own family airplane?

These last two items form the bedrock upon which to build a sturdy private aviation structure. General education in aviation matters is a necessary accompaniment, but there will be no basic and (*Continued on page* 64)

ANSWER TO A KNOTTY PROBLEM

By ALICE S. FUCHS

THAT furious squall over knots vs. miles per hour, only recently dispelled by the CAB's change of heart, brought up an interesting question. Would the change-over to knots really have proved so difficult?

Here you are, an ordinary citizen driving your car in miles per hour, reading miles on your map and adept at handling your Weems plotter marked in miles. You are not, and have no intention of ever becoming, a member of the U. S. Navy. The very thought of it makes you seasick. Yet none of that really stands in the way of your mastering the knots business, if you happen to feel so inclined. Let's assume that you hanker to be mentally ambidextrous. How would you go about unraveling the knots?

In the first place, as any tar will quickly tell you, the term knots indicate rate, not distance. It corresponds to "miles per hour" not "miles." "Knots per hour?" Perish the thought! "Knots" means "nautical miles per hour."

The most logical step for one who is rearranging his mental processes to think in knots, is to do a little rearranging of his airspeed indicator also. Simply paint the knots scale on the glass of the instrument over the miles-per-hour scale. Thus you can read both knots and mph at a glance and can make rapid conversion from one unit to another for radio call-ins during flight. Using a very fine brush and yellow paint, mark lines on the glass of the airspeed indicator to show 10-knot divisions with long lines and intermediate 5-knot divisions with shorter lines. The following chart will tell you where to place the lines:

KNOTS	*MPH*	*KNOTS*	*MPH*
35	40	80	92
40	46	85	98
45	52	90	103.5
50	57.5	95	109
55	63	100	115
60	69	105	121
65	75	110	126.5
70	80.5	115	132
75	86	120	138

You can paint the new figures on the glass over your airspeed indicator dial without removing it from the panel, though it will be easier to do a neat job if the instrument is removed. Perhaps you can lure a sign-painter friend into doing the job for you in return for a free ride.

With practically no expense, you now have on your panel an instrument which reads both knots and mph. The next problem is that of converting your thinking to knots when you aren't in the cockpit and have no instrument to look at. Of course the easiest way to convert mph to knots, or vice versa, is by using a computer. Grab that old computer you've been hiding in the bottom drawer, look on the time-speed-distance scale, and chances are you'll find along the edge the words "statute" and "nautical" with a little arrow by each. To convert 100 knots to mph, simply line up the "nautical" arrow with 100 and the "statute" arrow will point to 115 if your computer is any good. If it points to anything else, throw away the computer!

Probably what worries you is not the times you have a computer with you, but the times you have no mechanical aid. How can you learn to *think* in knots? You have a mental impression of a 30-mph headwind, but how much is a wind of 30 *knots*? Too much, of course, but how much too much? A very simple trick will enable you to make rapid mental conversion from one unit to the other.

The first thing to remember is that a nautical mile is bigger than a statute mile. Therefore when converting from knots to mph you must *add* something, and of course when converting from mph to knots you must subtract something. You might memorize the words "ADD TO KNOTS" or some other memory combination.

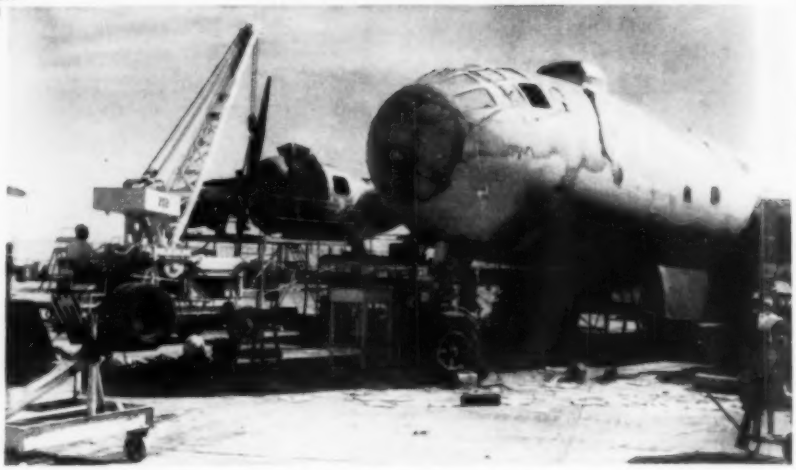
You can make a rapid and easy estimate of knots in terms of mph by the following simple trick. Drop the last figure of the number to be converted. If you want to convert 23 knots, drop the final 3. Take the remaining figure (2), add to it half of itself ($2 + 1 = 3$) and add that total to the original figure ($23 + 3 = 26$). The sum will be the number of miles per hour. To convert 100 knots, drop the final 0, leaving the number 10. Add to it half of itself ($10 + 5 = 15$) and add 15 to the original figure ($100 + 15 = 115$). Since this is a method of rapid estimate, drop all fractions or decimals. If you take half of 5, count it as 2 instead of $2\frac{1}{2}$.

If you want to convert mph to knots, use exactly the same process but subtract instead of add the final figure. Changing 97 mph to knots, drop the 7, add half of 9 to 9 (dropping the fraction) $9 + 4 = 13$. Then subtract, $97 - 13 = 84$ knots.

Remember, this trick gives (*Continued on page* 55)

Out of Cocoon

B-29 Superforts, in mothballs since '46, are fine-tooth-combed before they're okayed for Korea.



Its cocoon partially peeled, this B-29 at Tucson, Ariz., is in the first stages of the exhaustive reconditioning program that will restore it to first-class fighting condition.

By FRANK A. TINKER

WHEN THE KOREAN war made necessary the reconditioning of the mothballed B-29's, the question of their serviceability inevitably arose.

Even though they had been cased in plastic cocoons and stored in dry desert areas, some opinion held that age must have left its mark. Was it not too much to expect that the 29's could be readied quickly for combat?

Exact nature of the remodeling which has been returning the Superforts to duty has been, understandably, a subject of security. This is still true in certain details, but the over-all picture can now be presented.

A recent tour of the Grand Central Aircraft Company's plant in Tucson, Ariz., the scene of the reconditioning project, dispelled forever the idea that the 29's, regardless of condition, are run through a standardized series of repairs.

The program at Tucson is no mere "paint job" procedure. Painstaking inspection and drastic corrective action are in effect from the moment the plastic husk is peeled away. Only the best of the wartime B-29's were stored in mothballs and for the most part all came through hibernation unchanged from original condition. However, nothing is taken for granted. Every square inch of every aircraft is examined, and a program of modernization is planned for each individual plane.

The peeling away of the plastic coating is followed by stripping of the plane to a point where inspection can be complete. Often large sections of the fuselage and wing skin are removed. All control surfaces are taken off and re-covered, regardless of condition. Every rivet in the skin of the plane is inspected and replacements made where needed.

Landing gear in every case is completely dis-assembled, down to the last hydraulic cylinder. Where any part endures heavy stress, it is magnafluxed in search of inner defect or metal fatigue.

The fatigue quotient of the aircraft as a whole is a basic engineering study in reconditioning. Most Superforts were built in 1944-45 and saw but a year or two of service. Two or three thousand flight hours was average for cocooned planes. This stands in contrast to B-29's now coming into shop after 12,000 hours flight time. The decocooned craft have considerably less chance of being "weary" than their counterparts in continuous operation.

To continue down the check list—cables, both control and standby, are stripped and replaced. The same is true of communications and electronic equipment. All wiring is cleaned and tested for brittleness, right down to the bomb release lights in the bombardier's cockpit.

One crucial point of trouble in any inactive aircraft—fuel, oil, hydraulic and other pressure lines—is erased when all of this network is removed, cleaned, and refitted with new junctions.

Auxiliary power units upon removal are sent to a special shop for tear down and rebuild. (*Continued on page* 44)

Tearing the propeller out of the engine for a complete re-make is a standard reconditioning job. Prop is rebalanced and resurfaced.

When orders get in the way of judgment, orders are best ignored.

Pilot McCary by day.

I Learned About Flying From That! NO. 151

By JAMES G. McCARY

IF IT HADN'T been for a lone automobile driving along an Alabama backwoods road one night in 1941, there would probably have been one more cadet "killed on a routine training flight."

It was a warm August evening at Maxwell Field, Ala., when the cadets of Flight D fell out in their blue coveralls and marched to the flight line. That night we were to make our first night solo cross-country flight; in fact, our first night cross-country flight of any kind. Those were the days before all cadets were given the first night cross-country flight in a loose formation, accompanied by an instructor in the lead plane.

One of the wiseacres left behind remarked loudly as we walked away: "Count 'em now; there won't be that many when they get back."

Little did I realize then how narrowly I was to escape becoming one of those missing at the next day's formation.

At the hangar, we were dismissed from formation and sent inside for a briefing by the Squadron Commander. At the back of the briefing room stood a blackboard containing the route, altitude, bearings, radio frequencies, and other data for the flight.

The Squadron Commander announced the flight for that night—a "round robin" from Maxwell Field at Montgomery to Mobile, Ala., and return. The complete flight was on beacon-lighted airways. After emphasizing the data on the blackboard, he dismissed us to our individual instructors. From them we received help in preparing maps and flight logs, and were given last minute advice. The final words of my instructor stayed in my mind as I lugged my parachute toward the T-6:

"If you can't maintain the recommended altitude due to clouds, don't go 'on top'; stay underneath and 'contact' so you can see those beacons."

He didn't say what to do if the clouds came down to the treetops—and an inexperienced cadet didn't think to ask such a question.

The take-off was uneventful, and as I climbed south to pick up the first beacon I could see that the weather was indeed CAVU, as promised by the forecaster. All the way to Mobile everything went smoothly and as planned. Over Mobile, as I checked in by radio with the squadron control plane, the T-6 began to pass through clouds. Big, fluffy clouds were forming fast, rolling in over the city lights and steadily obscuring them.

I descended to the recommended altitude, 2,000 feet, and set course for Maxwell. I now found myself flying through solid clouds, so I pulled up to 3,000 feet, and thus put myself about 500 feet on top. There was no comforting flash from a beacon to be seen anywhere. I grimly held my course and stared through the darkness ahead, hoping to see a break in the clouds.

After several minutes, I recalled my instructor's parting words and realized that I was flying "on top", just as he had told me not to do. In my mind, there was nothing to do but let down until I could fly VFR under the clouds. I set up a let-down at 120 mph, 500 feet per minute rate of descent, and eased the T-6 into the clouds.

The red glow of the passing light streamed forward and painted the mist an eerie pink. Looking up, I saw the last star disappear. In my concentration on the instrument panel, I could not afford to dwell (*Continued on page* 46)

MORE MILITARY VS. CIVIL

As plane owner I read avidly everything you publish having to do with private flying whether it applies to me or not, because yours is the only magazine I can take in which I can read such material. So far as military flying is concerned, I can read all I can absorb about that in the daily newspapers and in general magazines.

JOHN LEWELLEN

Chicago, Ill.

Why so much military stuff in your magazine? Are you running out of things to write about? Who cares so much about the Air Force but them. They're sure tough on the civilians if one gets forced down on their field. Land in the river is better. I say let's ostracize them. They do us.

T. L. BYRNE

Aberdeen, Wash.

You must realize you have many young people reading your magazine who don't fly. I'm 13 and very interested in aviation. I know that my friends and I are fascinated by jet aircraft, guided missiles and military aircraft. We all dream of streaking along the "wild blue yonder" some day at about 700 mph. FLYING can take its part in aviation training for youth by keeping up its military and jet aircraft news.

WALTER BALCERAK

Brooklyn, N. Y.

I was very disappointed when I got the May issue of FLYING and found that you didn't have an article called Military News. Please put Military News back in the magazine.

DENNIS CHARLAND

Minneapolis, Minn.

In the May Mailbox Mr. Wood said that he never expects to have anything to do with military aviation and he wants you to put more on lightplanes and abolish military news. If you do this you will put the spark out of hundreds of young pilots. To most boys about my age (17), your magazine is one of the few that carries military aviation. If you put the spark out of flying you won't be having pilots to fly the military planes in order to protect Mr. Wood so he can read your magazine about more lightplanes. You should stress military more than civil aviation.

WHITNEY SORRELL

Los Angeles, Calif.

Your cover for May is really terrific. That North American RB-45 flown by some Army All-Star really holds a fascination for me. So do all the other articles written for either the Army or corporations with 10 to 20 grand to throw away on a Nacco Omni Navion. Who is kidding who? You know darn well that private flying is held together mostly with people in the $3,000 a year bracket or less. Let's take aviation out of the Captain Video class and put it where the average guy can understand it. Such things as breakfast flights, color tours, etc. Not how fast a burp 67Z9 can climb.

JOHN W. BOARTS

Battle Creek, Mich.

• *Anybody wonder why editors age early?*—ED.

SALVAGING THE AIR POLICY

I am a flight instructor with several hundred hours and also an A&E. It is truly alarming to see how many people are grounded today on account of the high cost of planes, maintenance, etc. Why can't we have a low cost, low powered lightplane with just the basic essentials. Take the little 40 and 50 hp planes such as the J2C*ub*, Aeronca K and Taylorcraft A, we had back in the '30's. By today's standards these planes were hopelessly slow with their 60-mile cruising speeds. Yet by any standards these planes rank high in safety due to their slow stalling speeds. And these planes sold for some $1,200 to $1,400. Seems to me that there was more interest in private flying those days than now, even though there was a depression.

Why couldn't planes of this type be made and sold in kit form? A lot of the labor could be passed on to the customer, the assembly work could be inspected at each stage by any A&E and, when completed, be test flown and stamped airworthy, all for a flat fee per plane. The total cost would be far lower than it is now, and many people would learn about airplanes first-hand.

SEVRYN A. LEWIS

Miami, Fla.

I love flying and would give my right arm (figuratively speaking) to get cadet training, but the Government doesn't want to fool with the guys who haven't a college education or were not the highest students in high school.

I am a Navy man and I like it very much. I also miss the flying that I did while in civilian life. My brother and I have owned two Taylorcrafts and have had a lot of good actual experience. It sure is a disappointment to miss that flying.

HAROLD W. THIEMAN

Bainbridge, Md.

All during the war I saved every cent I could in order to learn to fly when civilian flying was again resumed. The small amount I saved didn't go very far at $8 per hour. However, I worked hard at it and soloed when I was 16.

I feel that American youth got the axe due to the G.I. Bill. The majority of G.I. students learned to fly because Uncle Sam offered them something for nothing and flying is a lot more interesting than going to school. They got a private ticket and that was the last the airport saw of them. They didn't care to invest any of their own money so they quit flying.

I worked my heart out and flew and logged every minute that I could, while the G.I. student flew for free and still found things to gripe about.

The American youth still wants to fly but most of them, like I finally did, realize the futility of it all.

My wife and I fly whenever we can afford to, but I am not getting any further toward my commercial license and a career in aviation. My opinion is that the Government trained the wrong age group to fly.

MARTIN ROBB

Riverside, Calif.

I started flying when I was 16. In 1946, the cost was $9 an hour dual and $8 solo. I didn't mind because I lived at home and only supported my way through school. Upon leaving home in 1948 I was unable to continue flying. At the same time the veterans were flying on the G.I. bill, just to use up their bill. The price of dual was $11.25 an hour. Do you think any average person can pay this, and any wealthy person wants to?

MALCOLM E. HARPER

2nd Marine Division
Camp Lajeune, N. C.

Surely there is an error in your May issue in the news item "In Foreign Skies." The picture captioned a "Viscount" is, I believe, a Convairliner.

We read your magazine with great interest over here. I especially enjoy the free style of your articles, refreshing after the usual dry form of those in our aviation journals.

J. E. HUME

Hertfordshire, England

• *Reader Hume is, of course, right, and so are the other readers who detected the miscaptioned Convair.*—ED.

NORTH OF THE BORDER

St. Jovite Airport, northeast of Ottawa in the Province of Quebec, Canada, is becoming a favorite target for New England fliers on their week end fly-ins. Nearby Gray Rocks Inn caters especially to guests who arrive by air and on the occasion of the recent Wing Ding of the Worcester Chapter of the National Aeronautic Association offered an all-inclusive $29.75 per person package that covered meals, lodging and entertainment for a three-day week end.

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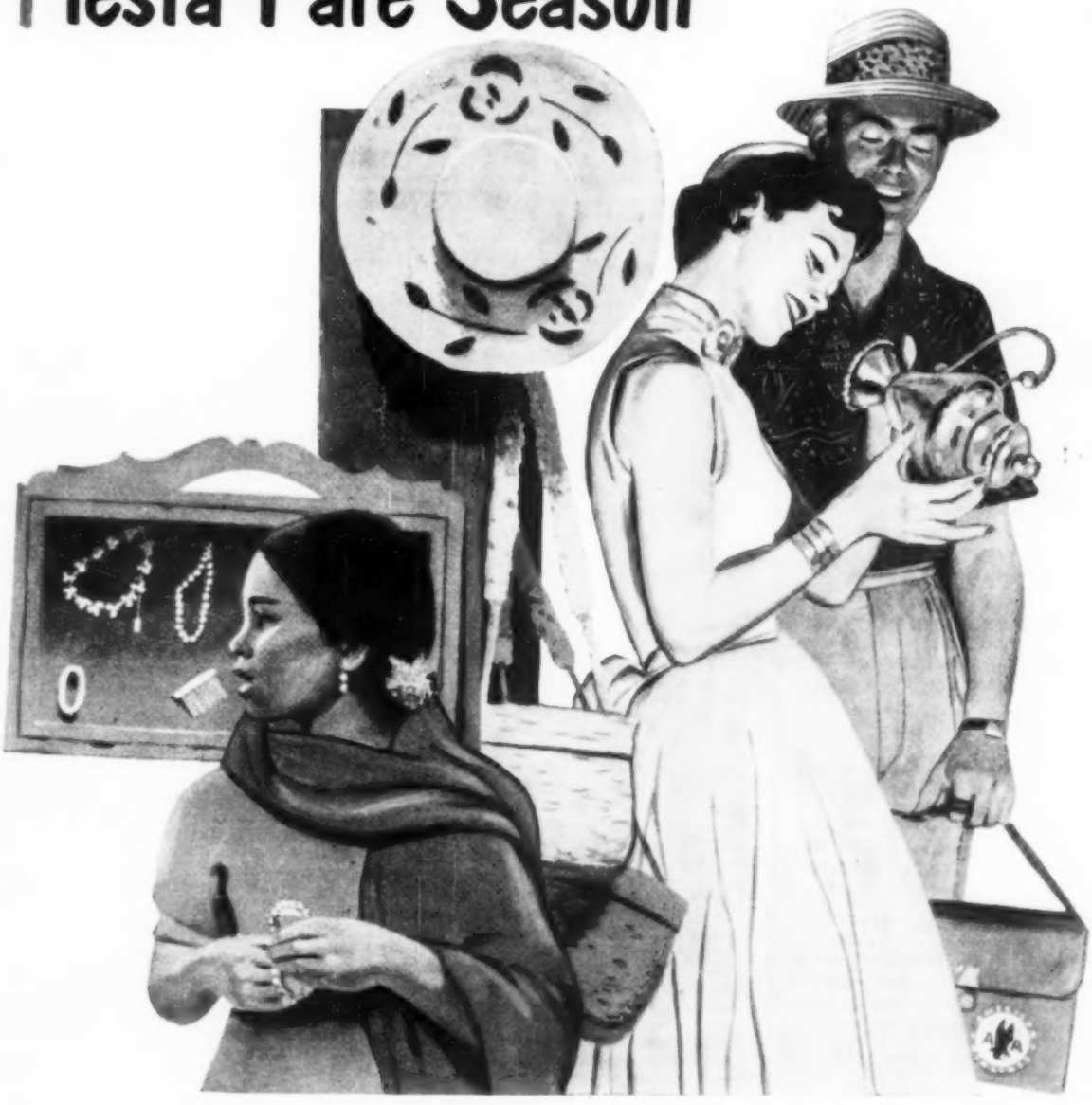

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AOPA NEWS

Aircraft Owners and Pilots Association is a service organization for the private pilot or aircraft owner. AOPA's full time staff is devoted to helping the individual pilot. Its aim is "To make flying more useful, less expensive, safer and more fun."

Headquarters address is Box 5960, Washington 14, D.C. Members also receive a special AOPA edition of FLYING, newsletters and confidential aviation data. Opinions expressed in this column are not necessarily those of FLYING Magazine.

"HIGH DENSITY" AREAS

Newest CAA device to restrict air traffic in busy areas like New York, Washington, Chicago, Los Angeles, etc., now is the "high density terminal area" which that Government agency proposes to make into law.

In first conferences with AOPA, CAA has described the "high density terminal area" restriction as being the addition of a five-mile minimum visibility limit, instead of the present three-mile limit that has been in effect in control areas for some time.

The CAA is proposing the new area as replacement for an earlier proposal of theirs, the "congested area." Proposed restrictions for the "congested area," as already reported to AOPA members in detail, were to include a whole new category of weather: MVFR (marginal VFR), which was to have been a minimum ceiling of 2,500 feet, and minimum visibility of six miles. Largely because of strong protests raised over that proposal—particularly by AOPA—the "congested area" plan has been dropped. The new "high density terminal area" has now been proposed as its replacement.

AOPA's position regarding the new proposal remains the same as it was with the "congested area" idea. AOPA will oppose any such plan until it can be shown convincing factual evidence that such restrictions are absolutely essential to air safety.

It is the contention of CAA, with the strong backing of the airlines, that present visibility and ceiling limits are probably obsolete, in view of the advent of new, high-speed aircraft now in use. AOPA contends that the vast majority of accidents involving airline aircraft have not been even remotely connected with any other aircraft, particularly aircraft getting in the way of the airline aircraft. AOPA has also pointed out that recent collision accidents of note have occurred in good weather, and have been marked by the fact that the airline aircraft ran down the other planes.

AOPA is participating in further meetings with CAA.

RADAR REFLECTORS?

While the military and CAA are working on development of a new radar beacon for aircraft, AOPA has been concerning itself with the possibility of improving the radar reflections that normally come from aircraft not equipped with beacons.

The radar beacon under development, even in its "low-cost" form, will be prohibitively expensive for the average plane owner for some time to come. The beacon is an automatic device that receives radar pulses from the ground radar station, then instantaneously and automatically sends back a radar pulse from the plane's special radar transmitter. That pulse from the plane shows up on the ground radar scope as a strong, bright "pip," either by itself, or in the form of a coded series of pips. Obviously, such a device will be very expensive for some time to come.

AOPA is concerned with finding some radar aid that can be applied to the present radar system inexpensively, yet with reasonable effectiveness.

In that connection, AOPA has been corresponding with Dr. Luis Alvarez, famed scientist and father of GCA, on the subject of radar reflectors. Dr. Alvarez has advised AOPA that the use of simple, inexpensive radar reflectors is quite feasible and worth exploring for civil aircraft.

Such a reflector would be either a metal or wire device that would be designed to concentrate a strong reflection of radar pulses from the ground, sending that strengthened reflection back to the ground radar scope.

In some preliminary investigation, AOPA found that the military have tried such an approach on a number of occasions, some of the tests showing promise.

AOPA has now formally asked RTCA (the Radio Technical Commission for Aeronautics) to explore the matter. AOPA is a member of RTCA, and that organization is now taking steps to gather all available research material on the subject from the Navy, Air Force, Coast Guard and other sources.

TV TOWERS

AOPA is participating in discussions and planning between the aviation and television industries, and the Government agencies affected, in connection with new television antenna towers.

When the Federal Communications Commission recently "unfroze" a large number of applications for TV stations, they also urged TV stations to erect the highest possible antenna towers, and to experiment with even higher towers than those now contemplated.

At present, there are a number of TV antennas proposed that would be as high as 2,000 feet above the ground—which is 610 feet higher than the Empire State Building. Such an antenna costs about $1,500,000 to build, so there will be relatively few of them.

But there will be larger numbers of antennas ranging from 600 to more than 1,000 feet above ground. All such structures will present a new aeronautical hazard that must be carefully studied and provided for by aviation interests.

(Advertisement)

Lockheed

DEVELOPS ADVANCED ELECTRONICS CENTER

Secret and advanced designs of virtually every electronics manufacturer in the U.S. are constantly studied, correlated and put to work at Lockheed Aircraft Corporation's electronics center in Burbank, Calif.

This center is one of the nation's largest clearinghouses for electronics intelligence. It was developed by Lockheed to provide the latest in this science of automatic controls for such Lockheed planes as the F-94, first U. S. All-Weather Interceptor; the WV-1 and WV-2, Navy Constellation radar sentinels; and deadly new models of the P2V Navy patrol bomber for anti-submarine warfare.

Such laboratories as Westinghouse, Hughes, General Electric, RCA, Raytheon, Western Electric, Hoffman and many others bring advanced electronic developments to Lockheed for practical application.

UNIQUE APPROACH

Lockheed's approach to electronics differs noticeably from many other aircraft manufacturers. At Lockheed the emphasis is on the application, not the manufacture, of electronics. That's because Lockheed begins the design of an advanced plane with the specific mission of the plane in mind. Knowing what the plane MUST do, Lockheed wants to be free to analyze *all* products of *all* manufacturers in order to obtain the most advanced electronic devices needed to accomplish this mission.

Lockheed does more than apply *existing* electronics. Often, no device is available to perform a specific job. At such a time, Lockheed scientists provide the all-important idea, frequently supplying the basic design, for a new product. Then they turn it over to an electronics company for manufacture.

TYPICAL EXAMPLE

America's first All-Weather Interceptor, the Lockheed F-94, is a current result of Lockheed's policy. Not being a manufacturer of electronics, noncompetitive Lockheed can work closely with companies who are, as well as the U.S. air services. As a result the F-94 was *electronically at least two years ahead* of competitive aircraft.

This leadership is a principal reason why Lockheed is attracting so many top experts in electronics.

LOGGING TIME

WITH HY SHERIDAN

Captain, American Airlines

PHONETIC FUSS

Well, I was dangling along in my Dizzy Six and, being in command, I wasn't doing any work and after awhile I put on my radio headset for the purpose of turning off the stewardess.

The airline radios are for business, and whoa to the man who gets gay over the radio waves for all we say is monitored by the CAA and the FCC and the Air Force also. It behooves to behave, so to speak.

You don't hear anything but technicalities when you put your headset on, not implying that they make any sense, either. One day a pilot got funny and the authorities played a practical joke on him. They fired him.

Accordingly, imagine my surprise when I heard a voice say: "Papa Romeo necked her." For a moment I thought I had Errol Flynn tuned in.

But it wasn't he. It was the new international letter code. We used to say "Roger" when we meant "all right". The reason that we didn't just haul off and say "all right" is that any fool can say "all right". It takes a special kind to say "Roger".

What do you suppose is all right now? Romeo is all right. "Maybe," said Sadie the Stewardess, "they just want to be more realistic."

That isn't what the authorities say. They say the new designations were chosen because each word is familiar in American, French and Spanish.

In the War to End War, you know, we had letter designations, too. We used to say "Ack, Emma, Beer." On occasions this meant A.M.B. On other occasions it meant: "For the love of Goethe, Emma, bring up some beer." This at least got you beer.

Language is a mess anyway. In the aptly named House of Commons, a member will get up and start talking and the other members will shout "Yah, Yah!" When I first heard that I thought that the gentlemen were giving the speaker the old bird but they were not. They were advising each other to "Hear, Hear!"

Now, this letter code is an international thing and many of us may be flying to the land of the weak beer and it behooves us to be prepared. When an Englishman begins to talk, he doesn't want to be hemmed in. When he wants to say "Papa Romeo Nectar," he is quite likely to branch out for himself and say: "The ardent old governor really gave her the old dash and doodle and all that sort of thing, don't you know." That is what *he* hears. To us it sounds something like this: "Taunt awl golfna. . . ."

When they can't make themselves understood better than that, I don't know how they keep the race going.

CHANGING TIMES

I fly to Mexico City, you know. Twenty-five years ago I used to fly in Mexico, also, and the country sure has changed, though I don't think some of the underwear has.

When I was there before, the only thing that would run you down on the streets was a mule, and a fellow has to be pretty well relaxed to have that happen. Now the streets are bulging with autos snorting along like bulls. Even climbing a pole won't help you. They team up. One car will bring down the pole and the following car will bop you one. No man is in good social standing unless he has a score of three Yanquis a day.

Mexico City is now full of juke boxes, television sets, rushing cars and people, noise, ulcers and all the wonders of modern civilization.

The one thing that has not changed is Bohemia beer. Except the price. When I was in Mexico before, this beer cost five cents American per bottle. It now costs 25 cents. But it is still as good as it always was, and that means that no American beer is in its class. This beer, compared with the best American beer, bears the same relationship to American beer as does Beethoven's Fifth to "The Little White Cloud That Cried."

"The thing I like about Bohemia beer," Sadie said, "is me."

* * *

SIMPLE ENOUGH

I have just found out from Howard West, the great investigator and pilot for Col. McCormick of the Chicago Tribune, why it is that policemen have bigger dances than firemen do. They sell more tickets.

* * *

WOO WOO

The heavily laden DC6 was ploughing through the clouds and taking on a bit of ice. Some of our passengers are getting pretty Well informed, and one of them stopped Sadie the Stewardess as she came back from the cockpit. "Is this plane all right?" he asked.

"Oh, yes. She is just an affectionate old thing," she replied.

"What was that?"

"Oh, yes. I was just talking to the captain. He said she felt mushy."

* * *

Epitaph

Blind now forever,
Comforted by the earth he struck,
Lies this hero.

Ah, cluttered play of mind!
He watched the round, deceitful face,
Waiting for zero.

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AOPA NEWS

PAG
MISS

The radar beacon under development, even in its "low-cost" form, will be prohibitively expensive for the average plane owner for some time to come. The beacon is an automatic device that receives radar

antennas ranging from 600 to more than 1,000 feet above ground. All such structures will present a new aeronautical hazard that must be carefully studied and provided for by aviation interests.

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WITH HY SHERIDAN

Captain, American Airlines

CHANGING TIMES

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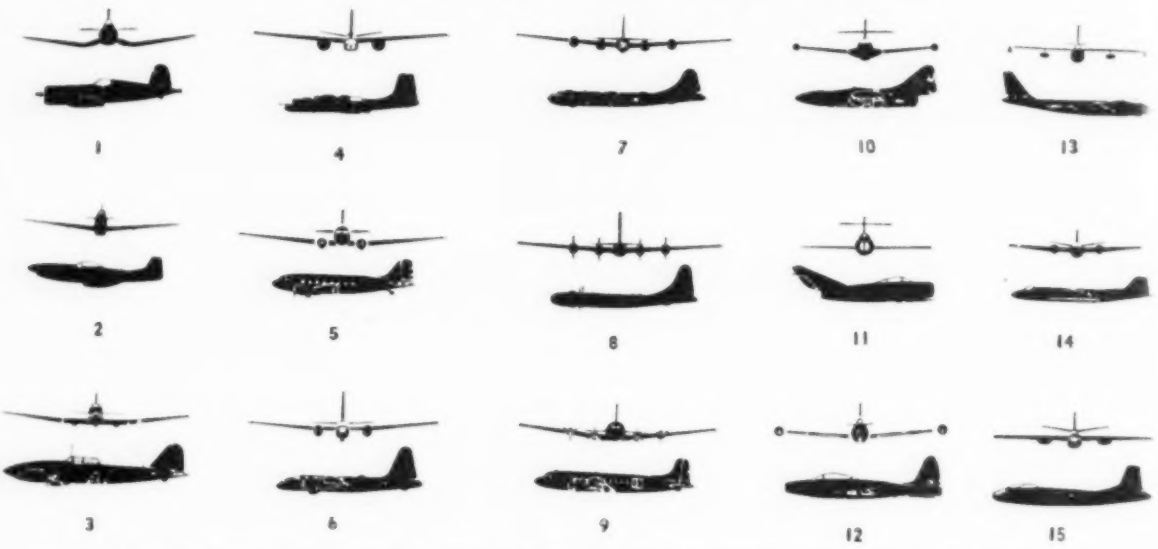
CAN YOU SPOT THEM?



Members of the Ground Observer Corps are trained by the Air Force to identify aircraft only by the number and type of engines. To aid with this training the above comparative silhouettes have been divided into the GOC classifications: Single Motor, Bi-Motor, Multi-Motor, Single Jet, Multi-Jet. Study should be made of outstanding features such as the high tail on the B-50 and P2V, the underslung engines of the B-26 and B-47, the F4U's gull wing, the MIG-15's rearward slanting tail, and the heavy tail group of the F9F.

Single Motor: 1. Chance Vought F4U Corsair; 2. North American F-51 Mustang; 3. Russian IL-10. *Bi-Motor:* 4. Douglas B-26 Invader; 5. Douglas C-47 Skytrain (also Russian LI-2, British Dakota, US Navy R4D, US commercial DC-3); 6. Lockheed P2V Neptune. *Multi-Motor:* 7. Russian TU-4 (also US Boeing B-29 Superfortress); 8. Boeing B-50 Superbomber; 9. Douglas C-54 Skymaster (also Navy R5D and commercial DC-4). *Single Jet type:* 10. Grumman F9F Panther; 11. Russian MIG-15; 12. Republic F-84 Thunderjet. *Multi-Jet:* 13. Boeing B-47 Stratojet; 14. British Canberra (also US B-57); North American B-45 Tornado.

Out of Cocoon

(*Continued from page* 36)

Propellers are rebalanced and resurfaced. So excellent has been this work that Hamilton Standard has authorized use of its trademark decal on the refinished props—good as new.

As for engines—no old power plants are put back. New or re-constructed engines, complete with modifications and refinements, are installed in the stripped-down 29's.

When all is said, the only part of the "age" business left is that which pertains to the metal in the aircraft frame. Everything else is either replaced or renovated.

Cannibalized parts—parts from other mothballed B-29's—are being used in reconditioned planes only where inspection of Grand Central and Air Force determination agrees that they are as good as new. Cannibalization is resorted to only where a few parts are in critically short supply from the original manufacturer.

The re-use of such items as fibre lock nuts depends upon where in the aircraft they are located—how much stress and heat are involved. If such nuts have been used in the cowling, for example, they are thrown away when the B-29's are reconditioned. If their use has been at some point where neither heat nor strain is present, the nuts are used again.

Cleanliness and tidiness are always a problem in reconditioning work, particularly in the "close" areas of an aircraft's interior. At Grand Central's Tucson plant the problem is met by suction cleaning, supplemented by visual inspection and hand work.

Quality First

An observer at Tucson is also impressed by the stress upon quality work which pervades the entire operation. Above and beyond skill in such a project is the attitude toward quality of both management and line labor. Air Force and company standards, high as they are, appear to be minimums of perfection, in the thinking of all concerned.

Labor in the aircraft industry is, of course, an increasingly difficult problem, due to the experience required, the lack of time to train men in critical skills, and the ever-present competition in an expanding industry. Grand Central has been fortunate in finding in the Tucson area an experienced and untapped labor pool—a residue from the Tucson aircraft plants of World War II. Beyond this is the circumstance that Arizona climate is kind to arthritic sufferers, and arthritis is an occupational hazard of watch makers. These ex-tradesmen do a precision job on aircraft instruments that is beyond any ordinary standards.

Another favorable factor at Tucson is the absence of restraint denying specialists the right to work on numerous items of reconditioned aircraft, rather than standing idle while waiting for another plane to commence primary work. This has meant over-all economy and efficiency—something growing daily more essential if defense costs are to be kept within the ability of the nation to pay.

Considering the extensive remodeling of the mothballed B-29's, it might appear that new planes would have been almost as cheap, or that the money would have been better spent in extending the production of the newer B-50. There are a number of sound reasons against this conclusion. The time factor is one. Necessity of re-tooling is another. Inflated costs of new aircraft is a third. Price per reconditioned B-29 is still far below original cost of a new item.

What happens to a B-29 after it leaves the production line in Arizona is the responsibility of the Air Force but also the concern of the company. To date, no supportable criticism against the planes' performance in combat has come to light. The reconditioned craft are as adequate as those which fought the war against Japan. In Korea, the mothballing and reconditioning projects have paid off. END

Dean of Private Pilots?

(*Continued from page* 28)

might equally take a long look at a complete American airman, who by his breadth of interest in a field where he does not even make his living, put himself in a position to become a great servant of his Country and the whole free world.

The title of this article bears a question mark. Luis deFlorez would be the last to claim that he is the Dean of Private Pilots, nor do the writers make such claim. We merely cite his experience toward that end—an experience that is far from ended. END

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I Learned About Flying

(*Continued from page 37*)

on the thought that this was my first time to be flying entirely by instruments. Before this, instrument flying had consisted of being under a hood with a fellow student or instructor in the other cockpit as observer. Now I was alone, flying on instruments in bad weather on my first night cross-country flight.

The let-down was only slightly erratic, for the air was fairly smooth. The altimeter slowly wound down. At an indicated 1,200 feet, I decided I had gone far enough. The highest point along this route was 700 feet, which theoretically left me 500 feet clearance. I moved the throttle forward and changed the descent to a climb. This time I had to go to 4,000 feet to get on top of the cloud mass. Then for about 20 minutes I flew on course and waited for a break in the overcast.

There still was none. Gradually my desire to see the friendly lights of towns and beacons overcame my better judgment. Once again I began a let-down. This time there was no decision to level off at 1,200 feet. "Surely," I thought, "these clouds must be well above the trees."

Everything was under control, and the altimeter was passing through 900 feet, when suddenly the T-6 broke into the clear, heading straight for an automobile moving along a backwoods road. I was almost blinded by the sudden sight of its headlights. Straight ahead lay a row of trees. Other treetops were passing in a blur beneath the wings.

In a flash, I laid on full throttle, pulled up across the car, and was immediately in the clouds again. The sudden burst of engine power and the accompanying torque made all the instruments seem to go crazy. I fought in a cold sweat to settle them down again. In my fright, it seemed that I could only straighten out one instrument at a time. I kept saying to myself, "rate of climb—up for sure; watch that airspeed, already back to 100; level the wings on the artificial horizon; get back to that compass heading."

Back on Top

After minutes that seemed like hours, everything was under control and I had the T-6 back on top. There I resolved to stay, until I sighted Maxwell or the fuel gave out.

Before long, as I was tuning in the Maxwell radio range, the solid clouds became broken and the beacon lights came into view about 10 miles to my left. They led me into the home field and to a safe landing.

My sleep that night was broken many times as I dreamed over and over again of that sudden pull-up from a near crash. Each time, the sight of those car lights saved me from going down a few more feet into the trees. Then and there I resolved never to let down on instruments to get under a low ceiling, unless I was making the prescribed radio range let-down and low approach to an airport. END

Adventure with Wind

(*Continued from page 13*)

by pilots who have come face to face with the power of the Sierra Wave read like fiction. One such story is told by Bob Symons, Bishop's dean of the Wave, who has made hundreds of flights in its currents.

Symons, equally at home in a sailplane or in the cockpit of a fighter, uses his Lockheed *Lightning* to seed the clouds above the Sierras for the California Electric Power Co. Returning toward his base after one such job, Bob found the Bishop airport and the surrounding valley blotted from sight by a dust storm. Without gas to get him to an alternate airport, Symons feathered one propeller of his P-38 and experimentally nosed into the Sierra Wave.

With but one of its two engines functioning, the heavy fighter began to gain altitude, whereupon the pilot cut the other engine. In the ensuing silence Symons watched the hands of his altimeter move slowly around as he held the ship in the area of the Wave. Within 15 minutes the P 38, with both props motionless, climbed to 32,000 feet.

Bill Partridge, riding with Symons in the nose of the *Lightning*, verifies the story. For almost an hour, until the dust storm had cleared from the airport, the fighter rode up and down in the "elevator."

Until two years ago, little was known about the Sierra Wave other than that it was generated when the wind blew directly across the Sierra Nevada mountains. Then, in 1950, a special Sierra Wave project was formed to chart and study every phase of the phenomenon. Jointly sponsored by the Air Force, Navy, University of California at Los Angeles, and the Southern California Soaring Association, the Project is being directed by the meteorological department of UCLA and financed by the Navy.

Project pilots, flying sailplanes equipped with more instruments than many power planes normally carry, are already estimating that, on "good days," the top of the Wave may extend more than 90,000 feet. Correlation of data, evolving from study and experiment, is expected to result in a number of changes for future powered planes and gliders, as well as to cause revision in certain basic flight regulations.

To explore the more extreme altitudes of the Wave will require pressurized-cabin sailplanes, since oxygen alone does not give sufficient protection to airmen above 35,000 feet.

Although the Sierra Wave may be the biggest of all such phenomenon, due to the nature of the Sierra Nevadas and the long trough of the Owens Valley, similar standing waves may be expected to exist on the lee side of all great mountain ranges.

Erring Altimeters

According to Fitzhugh, Project pilots are already reporting their altimeters as giving false readings amounting to several thousand feet, in the area of the Wave. If authenticated, this fact may drastically change the minimum permissible altitude of aircraft cruising above high mountain terrain.

Until two years ago, every major soaring record was held outside the United States. Then, in 1950, William S. Ivans, Jr., a 30-year-old soaring pilot from La Mesa, Cal., nosed his all-metal Schweizer into the Sierra Wave. A few hours later he was back on the ground, his barograph showing that he had risen to 42,100 feet—a new world's altitude record for single place sailplanes.

As FLYING went to press it was learned that a new two-place glider altitude record may have been set in May by Larry Edgar, pilot of the Sierra Wave Project, and Harold Kleiforth, UCLA meteorologist, who reported reaching 44,000 feet.

The following year, Richard Johnson, another American glider pilot, settled into the seat of his special RJ-5 and thermal-thumbed to a new international distance record of 545 non-stop miles. This flight took the record from Russia, which had held it for 12 years.

Currently both the men's and women's world altitude records for multi-place sailplanes are held in the U. S. In 1950, Harland Ross and George Deibert climbed to 36,000 feet, and Betsy Woodward with Vera Gere Courtney to 17,600 feet. Attesting to her ability with a sailplane, 23-year old Miss Woodward is one of the hand-picked crew working on the Sierra Wave Project.

European Records

The multi-place duration record of 50 hours, 26 minutes, was set in 1938 by two German pilots, August Bodecke and Karl Zander. Charles Atger of France set the single-place record last April with the phenomenal time of 56 hours, 15 minutes aloft.

Pointing out that an interest lag in soaring has given the United States a late start, Jim Fitzhugh feels that, with pilots such as Ivans, Johnson, Woodward and others riding the Sierra Wave, many international records will accrue permanently to the United States. He hopes this fact may stimulate interest in an organized national program.

Fitzhugh notes that Russia is spending vast sums on such a program. In France, the government purchases the sailplanes, provides flight strips in appropriate areas, and contributes to training equipment. Even tiny Switzerland sponsors soaring activity to assure air age development within the ranks of her youth.

There appears to be no doubt that soaring in one or another of its types is applicable to any area of this country and offers participation to the broadest cross-section of Americans. Only the impetus of a national program to get the ball rolling is required. END

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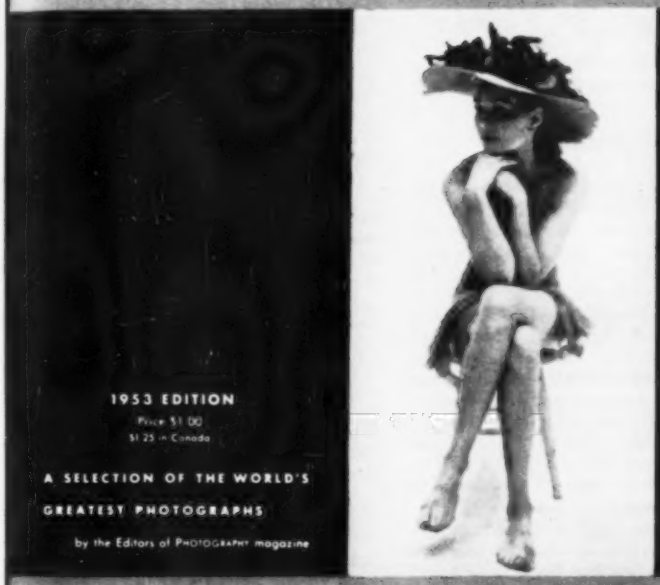
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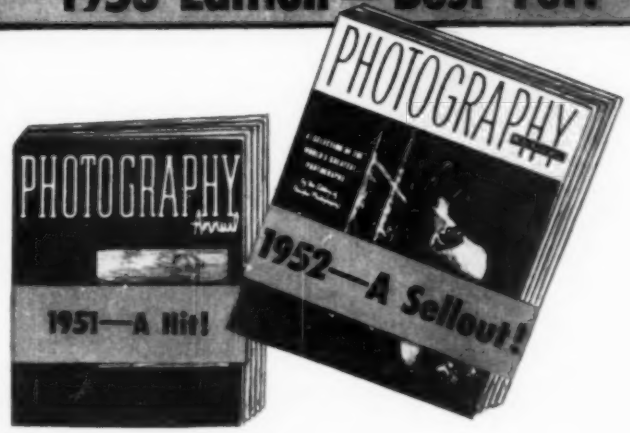

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Defense of the Homeland

(*Continued from page 27*)

my planes. Like television, radar is a line-of-sight instrument. Terrain interferes with its operation just as it does with television. Even the curvature of the earth's surface works against it. It can be jammed by the enemy, made ineffective by atmospheric conditions and go out of order like any other mechanical device.

Radar is most effective against high flying aircraft. The Russians know this as well as we do. The best technique in avoiding radar is to fly low.

Here radar must be aided by visual observers. Civilians—more than 1,000,000 volunteers—are needed for this part of the defense network. The Air Force has planned a system of 20,000 observation posts—one every eight miles—two or three states in depth throughout the border and coastal areas of the nation.

To staff this Ground Observer Corps system 24 hours a day calls for a million men and women to serve from two to four hours a week scanning the skies in their four-mile radius area and reporting what they see by telephone to filter centers, also manned by volunteers. A filter center receives reports from several hundred observation posts. Each report is plotted on a large grid table. Tracks of each plane's flight are followed across the grid and reported to an Air Force Ground Control Intercept station which compares the information with radar reports.

Actually, the civilian Ground Observer Corps can accomplish more than just report plane movements. Although it identifies planes only by number of engines, this is a far more positive identification than is possible to radar which only sights something moving in the sky.

Taking Saucers Seriously

Another GOC activity, and one about which very little has been said, is its potential in observing "flying saucers." This is a matter which the Air Force takes very seriously, regardless of any opinions to the contrary. Radar almost daily is tracking flights which, due to their speed and unknown origin, could not conceivably be airplanes as we know them. If the civilian Ground Observer Corps were fully organized and activated on a round-the-clock basis, it would provide constant visual observation of every mile of sky over some two-thirds of the United States. This fact has been recognized by the Air Force and provision made for reporting by civilian posts of objects which, lacking any better designation, are termed "flying saucers."

To sort and sift commercial, military and other flying craft or objects from potential enemy aircraft is a job completely beyond the scope of radar and ground observers. To determine whether the reported craft is friend or foe calls for an intricate system of flight plans. These plans are filed with the Civil Aeronautics Administration or Military Flight Service for all commercial and military flights. If a plane deviates by more than 20 miles or five minutes from the estimated flight track in its plan, it is immediately subject to interception by the Air Force.

Private planes file these flight plans only when they intend to fly above 4,000 feet, or 20 miles off shore, or into an Air Defense Identification Zone such as exists in the vicinity of Los Alamos and Oak Ridge. Any plane that strays into these zones above 4,000 feet is very shortly going to find itself flying formation with a couple of bristling jet interceptors.

At this writing, only the radar network and flight plan portion of the warning system is in operation. The civilian Ground Observer Corps, one-third organized, has been mobilized for round-the-clock duty starting July 14. However, there is some doubt if, in their present state of apathy, the necessary 1,000,000 civilians can be recruited for the 50 filter centers and 20,000 observation posts.

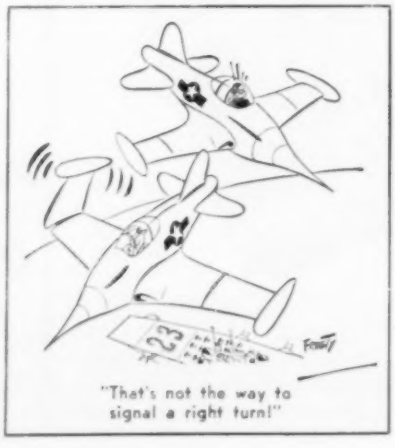
This writer chooses to believe that the problem of recruiting civilians is not one of apathy so much as lack of understanding. Whether, in this election year, it will be possible to publicize the need sufficiently to make them understand is anybody's guess.

"Spotting" Not Required

Although the Ground Observer Corps is an auxiliary of the Air Force and under Air Force Command, recruiting for observation posts and filter centers is handled by Civil Defense. Anyone living in the 36 states (shown in the dark area of the accompanying map) who wishes to volunteer should apply to his local civil defense organization. If information cannot be obtained there, one should contact State Civil Defense headquarters. Knowledge of aircraft identification is *not* required. Housewives are urgently needed for daylight hours. Men who can take on some of the "dawn patrol" hours will be more than welcome.

Where the Air Force alone is responsible for an element of the defense network, the operation has been undertaken on a round-the-clock basis for almost two years.

Checking radar tracks against known flight plans, the Air Force has maintained constant vigilance. When an unidentified plane is tracked, the Ground Control Interceptor station involved "scrambles" interceptor jet fighters. Squadrons of these fighters are located at strategic military and civil air bases throughout the entire chain of the defense network. On constant, 24-hour alert, crews can be airborne within three to five minutes after receiving the order to scramble.



"That's not the way to signal a right turn!"

Type of aircraft used for interception differs from planes designed to carry out the former three-fold doctrine of air power. At present three models are available or becoming available for this work: the Lockheed F-94, the North American F-86D, and the Northrop F-89 *Scorpion*. All are distinguished from other jet fighters by the long nose which houses radar and other electronic equipment necessary to interception. All are two-place ships carrying pilot and radar operator. Quick take-off, fast climb to altitude, and straight-out speed are essentials of the type.

Interceptors Mean Business

To intercept and visually identify a "bogey" which radar has tracked but cannot identify has been the interceptor fighter squadrons' job to date. But the Air Force is taking no chances on a sneak attack. All interceptors take-off "loaded for bear" with full armament—machine guns, cannon and missiles.

Although surveillance radar and Ground Observer Corps reports aid the interceptor in finding its target, there are times when interceptors cannot make contact. The warning then goes down the line to the next squadron.

In the meantime, reports from a number of GCI stations are received and plotted at an Air Defense Control Center. This is the "brain" or command post of an Air Division. Here the entire attack picture is studied by officers responsible for defense of a large area. From here also additional fighters may be ordered to intercept.

If an unidentified plane or group of planes gets through the chain of interceptor squadrons, it is the Air Defense Control Center's responsibility to warn cities in the potential path of flight. Key Point Warning Stations are alerted and fan the warning out to civil defense units with the yellow alert and, finally, the red alert indicated by general alarm of air raid sirens.

Also alerted by the ADCC are the Army's anti-aircraft units. Since air defense is an Air Force command, the Army maintains anti-aircraft coordination at command staff level.

That, basically, is the air defense mechanism. Many elements enter into its proper functioning. Timing is perhaps the most essential. Split seconds count. From the moment a plane is first sighted by an observer to the moment the report is plotted in a GCI station, no more than 30 seconds should have elapsed.

Time Is Precious

Training civilian observers and filter center operators over the past two years, the Air Force constantly has tried to lop off seconds of delay everywhere along the line. The goal is speed in reporting the plane, speed in communications along the telephone network, speed in plotting the report at the filter center, speed in

Birthday Party for Wings Club

Principal participants in the tenth anniversary celebration of the Wings Club in New York were (l. to r.): Arthur Godfrey, speaker at the luncheon party; O. M. "Red" Mosier, president of the Wings Club and Vice-President of American Airlines, and David Martin, manager of the Biltmore Hotel, home of the Wings Club.

assigning it a track number, speed in forwarding track information to the GCI station, and speed there in plotting it, comparing it to radar information, sorting out its identification and deciding whether friend or foe. Then comes speed in scrambling fighters, speed in firing the engines, speed in taking off, speed in locating the "bogey," speed in assuring its identification or, as it may be some day—speed in knocking it out of the sky.

Seconds, seconds, seconds. Every one counts. A plane traveling at 600 miles an hour covers five miles in 30 seconds, 10 miles a minute.

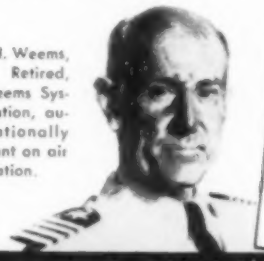
Distance and speed as they apply to modern aircraft are sometimes difficult to comprehend. Radar stations in Canada, Alaska or Greenland can begin a warning of approaching aircraft that may not be intercepted until they have crossed the borders of the United States. An observation post in North Dakota can report a bomber formation that may not be intercepted until it is over Iowa.

Yet one mid-western state, asked by the Air Force to establish a network of observation posts every eight miles throughout its territory, so thoroughly misunderstood the business of air defense that it set up posts only around its own state borders. It was willing to provide the volunteer warning service, but only for what it thought to be its own defense.

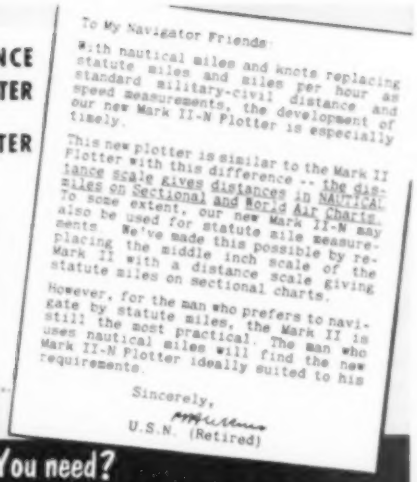
People cannot seem to realize that an observation post or radar station in New York City is not defending New York but rather Pittsburgh, Washington and Detroit.

Perhaps the most significant element of the new principle of air power employment is that it offers civilians an opportunity to take active part in the defense of their country—not just their homes, their cities and their concepts of freedom —but their nation. END

CAPTAIN WEEMS DESCRIBES DIFFERENCE BETWEEN HIS NEW MARK II-N PLOTTER
(for nautical mile navigation)
...AND HIS FAMILIAR MARK II PLOTTER
(for statute mile navigation)



Captain P. V. H. Weems, U. S. Navy, Retired, founder of Weems System of Navigation, author, internationally known consultant on air and sea navigation.



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However, for the man who prefers to navigate by statute miles, the Mark II is still the most practical. The man who uses nautical miles will find the new Mark II-N Plotter ideally suited to his requirements.

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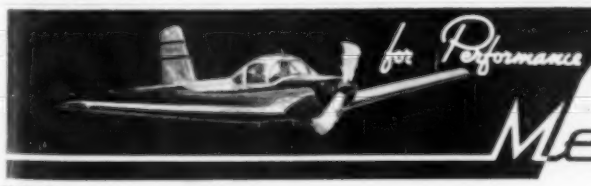

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Pacer and Tri-Pacer

(Continued from page 19)

of Bald Eagle range, and the rest of the Allegheny Mountains ringing Lock Haven.

You stop at the north end of the runway, carefully check everything over, including mags at 1,500 and carburetor heat, and swing her around. One proper technique is to let her roll down the pavement wide-open until she gets around 60 mph (flaps up). Then ease the nosewheel off, and that's all there is to it. Another is to ease wheel back at the start.

The airspeed crept up to 90 mph as I gained altitude. Pete pulled the wheel back in his lap as we approached a 30° angle with the runway. The airspeed hung on 80, and the rate of climb indicator swept up to 1,200 ft. then back to 1,000 ft. per minute and clung there. I waited for the stall indicator to "beep," but all was quiet. At 400 ft. I banked to the left, then another quick left to miss the nearest Allegheny "hill." Either that mountain was a lot closer than it looked, or this airplane was a lot faster than I figured.

I looked for the runway, but it was to the rear. I eased the throttle off, swung into the cross-wind leg at 90 mph (80 is the best gliding speed), and on final decided I was about right. The *Tri-Pacer* had a greater rate of sink than I had planned on. Consequently, I was headed into the Susquehanna River, instead of onto the runway just across it. Pete grinned as I rammed the throttle on and humped the airplane across.

As the black tarvia sped by, I eased the wheel back, trying to stall, yet keep the tail from dragging. You can't drag the tail except with a heavy rearward load. My first attempt wasn't bad, except that I landed too fast, and she veered a little as she settled forward on the front wheel. There was no tendency to ground-loop, or get out of control in any way. There are no toe or heel brakes on the *Tri-Pacer*. A 12-inch handle protrudes from under the center of the instrument panel. You pull that and both rear wheels brake. You guide the ship by the rudders, which are connected to the nosewheel gear. So, by a combination of rudder and right hand action, you bring the ship to a halt. On the second go-round, I felt quite like Mrs. Jeanne Voltz, a Miami housewife, who soloed one of these jobs after one day of instruction.

While waiting for a shower to end, I checked another *Tri-Pacer* that we were to fly. It was royal blue with light gray striping. The metal cowling was of a special enamel that does not chip or peel, while the rest of the ship was coated with butyrate plastic "duraclad." The ceiling was of a light blue-gray fabric. Individual front seats and the one-piece back seat were of a checkered fabric with deep brown leather trim.

The top row of the instrument panel included fuel gauge (left and right switch), large box for radio equipment, artificial horizon, directional gyro, needle and ball, sensitive altimeter, recording tachometer, and amperemeter. The middle row read clock, airspeed, rate of climb, manifold pressure, and oil temperature-pressure combination. On the bottom row (which was recessed for safety) were phone jacks, navigation and landing lights, carburetor heat, brake, mixture control, cabin heat (individual front and rear), and fresh air vent control. All navigational instruments were radium-dialed.

Pete climbed in and we tried it again. I had succeeded in climbing pretty well, but not well enough to suit Pearson. I levelled off at 800 and trimmed for level flight. At 2,375 rpm she cruised 125 mph easily. For optimum speed the factory recommends 7,000 feet cruise which gives 134 mph at 75 percent power. In level flight you can see 12 inches below the horizon. In the climb, the nose comes up even with the horizon, and the angle between bottom camber of the wing and the horizon is about 15°. As rudder and aileron are tied in together, coordination is simple. However, it can be over-ridden.

PIPER PACER AND TRI-PACER

	PACER PA-20 "135"	TRI-PACER PA-22-"135"
Engine	Lyc. O-290-D2	Lyc. O-290-D2
HP and RPM	135 at 2600	135 at 2600
Gross Wgt. (Lbs.)	1950	1950
Empty Wgt. (Lbs.)	975	1005
Useful Load (Lbs.)	975	945
Wing Span (Ft.)	29.3	29.3
Wing Area (Sq. Ft.)	147.5	147.5
Wing Chord (In.)	63.0	63.0
Length (Ft.)	20.4	20.4
Height (In.)	74.5	100
Prop. Dia. (In.)	74.0	74.0
Power Loading (Lb./HP)	14.4	14.4
Wing Loading (Lb./Sq. Ft.)	13.2	13.2
Baggage Cap. (Lb.)	50.0	50.0
Fuel Cap. (Gal.)	36.0	36.0
Performance		
Top Speed (MPH)	139	137
Cruising Speed at S.L. (MPH)	125	123
Cruising Speed at Optimum Altitude*	134	132
Stalling Speed (With Flaps) (MPH)	48	48
Best Rate of Climb Speed (MPH)	84	84
Rate of Climb (Ft./Min.)	800	800
Cruising Range (Mi.)	580	580
Service Ceiling (Ft.)	15,000	15,000
Absolute Ceiling	17,500	17,500
Fuel Consumption (75% Power) (Gal./Hr.)	7.7	7.7

*7,000 Feet.

Source: Piper Aircraft, Lock Haven, Pa.

I kicked rudder and she heeled around with zest. On wheel turns without rudder, the needle and ball place themselves correctly with a minimum of slip.

Returning to the field, we tried minimum distance take-offs. From standing start with no flaps, our first attempt was a distance of 254 feet to being solidly airborne. With tape measure, we checked a second take-off with half-flaps (standing start). This measured 173 feet. With a 10 mph wind, 30.50 hg., temperature 38 F., this wasn't bad, and might have been lessened had the technique of running first, then applying half flaps, been used.

Anxious to check these figures against a conventional *Pacer*, PA-20, I returned to the hangar, and we climbed into a metallic Irish green *Pacer*, with light gray trim. It was equipped like the blue job, but had the Omnihomer in it. After a quick turn around the field, in which Pete showed how it should be flown, we took out the tape and started measuring. From standing start, no flaps, the green job ran 225 feet before becoming solidly airborne. With half flaps from standing start she ran 207 feet, then broke ground. Remember, neither airplane was fully loaded, so don't be landing on your nearby tennis court, especially if you live west of Denver. We checked one landing in this ship at 300 feet from touch-down to turn-off.

As to the argument of side-by gear vs. tricycle gear, Wally Smith in the Sales Department had this to say: "Fully 45 per cent of our purchasers last year were 'newcomers'—never owned a plane before. What did they buy? The *Tri-Pacer*. Why? Because of the simplification of controls—simplification of everything about flying."

Views on Performance

The *Pacer*, in my own opinion, performs slightly better than the *Tri-Pacer* because it has less drag in the nose gear. It does not handle any better in the air. To offset this, the *Tri-Pacer* is the simpler of the two to fly, and, according to Piper Engineering, performs as well. Its visibility is much better than the *Pacer's* on the ground, since in three-point position the *Pacer's* nose is several inches higher than the runway. As to the durability of the nose gear on the PA-22, it was bounced in for hundreds of hours on rough sod, and never failed in the experimental tests. With the added reinforcements on the nose gear, it should resist everything but a "direct hit." Howard Graves, Airport Manager, stated that, in testing both ships, the *Tri-Pacer* was able to out-perform the *Pacer* in short landings.

Next day, we took Bill Piper's demonstrator *Tri-Pacer*. It was equipped with everything but the kitchen sink and I expected it to get out slowly. However, using the "pull-off-at-60" technique, it broke ground quickly, and settled into a steady pull of 1,200 fpm indicated, at 80 mph. We broke out of traffic and fled down the valley at 1,200 ft. With trimming, the airspeed averaged 125 mph indicated on all level flights. There is a notch in the throttle shaft which holds the throttle at 75 per cent power. Of course, the pilot can move through this position with a little pull or push. You don't need radium on your airspeed or tachometer with this. Just pull the throttle until it hitches, and trim for level flight. You could almost do it blindfolded.

Spin-Proof

At higher altitude, I put it through slow-flight, stalls, and turns with and without rudder. If you turn the wheel lightly, you can get a neatly coordinated bank. Not so with rudder alone. This ship was rigged nicely in the interlocking of aileron and rudder. The stalls were more a concealed mush-down than a clean-cut stall. The wheel was held back with the nose level, and the only instrument that told us that the plane was moving was the sensitive altimeter. It "delevated" some 300 feet in a prolonged stall—no oscillation. Even while rotating the wheel, there was margin of control. No

tendency, or suppressed desires, to spin. The Stall Warning Indicator surely did act up for a while though.

Returning to Cub Haven I shot some landings with patient "Pete" at my side. Then he left me alone with N 1651A. Solo, this ship really performs. I believe it would be much easier to solo a novice in this ship than in a conventional geared one. It drives like a car on the ground and in the air—wheel only. The test pilots at Lock Haven actually fly a complete pattern, ground to ground, and never touch the rudders.

Both *Pacers* are ATC'd under Civil Air Regulations, Part 03, which means they are stressed for 4.4 Gs in Utility Category, and 3.8 Gs in Normal Category.

As to suggestions—with a flight cap, a tall man has no difficulty with the ceiling. Wearing a fedora, he should sit in the back. I was a little piqued when I had to lean way over from the left to read the tachometer and manifold pressure. This was because the protective blind group panel stuck out slightly from its base.

The master switch placard is tucked slightly under the left cushion. It is hard to read without sliding over and raising the cushion. If I had flown these ships more, I would have memorized the position, but it was awkward at first. The airplane is stiff on the controls, perhaps a combination of newness and a desire to stop novices from over-controlling. The gas selector valve clicks into position on left and right, but is not positive acting. Some slight re-work of this might help someone someday.

Roomy Enough

I had heard criticism that the *Pacer* had a cramped cabin. I was a comfortable 5-11 in each of the four seats. Its dimensions were 58" long (panel to rear cushions), 37" wide, and 43" high. Luggage compartment measured 16" (average) long, 33½" wide, and 25" high. With rear seat removed (easily and quickly, for I watched it being done), I measured the cargo space at 44½" long (to rear of front seat), 33½" wide, and height varying from 25" rear to 41" front. This handles 36 cubic feet by volume. If the right front seat is removed, you gain the frontal distance mentioned above.

I liked the welded rosettes in the lift struts. This denoted a double wall to resist tension and compression loads.

In conclusion, I was impressed with beauty, performance, and utility. One of the pilots told me he had hopped a patient to Philadelphia in the Gran Stretcher. Round-trip cost $32. Ambulance fee from the Philadelphia Airport to General Hospital was $35. On a comparative cost basis of 50,000 miles, an automobile costs .07 per mile, railroad .05 per mile, and .073 for the *Pacer*. On this same basis, it takes the car 1,250 driving hours, the train 1,000 sitting hours, and the *Tri-Pacer* 400 pilot hours.

For durability, Max Conrad hopped one of these to Rome and back, and I don't mean Rome, Georgia. It appears to me that Piper has one of the finest all-purpose airplanes for its price to be found anywhere. END

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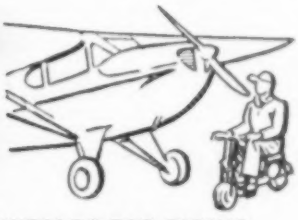

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Re-Cover That W

(Continued from page

the edges of the inside end ...red with the finishing tape.

Lastly, a long strip was measured from the beginning of the curve on the leading edge, along the curve and along the complete trailing edge. The leading edge end was doped on about a foot and let set. Now, having placed the tape along the curve as it was to be doped on, I was told to pull the tape taut. It automatically shaped itself down around the curve without wrinkles. Then the full length of the tape was doped into place, and held until set lest it slack off.

ROUND SIX

Placed grommets. They have to be placed *exactly* and stuck with dope.

ROUND SEVEN

Brushed on more dope and, after each coat dried, lightly sanded the complete surface, except over the screw heads, with 000 sandpaper. The purpose of this was to make the surface smooth to the touch. Sanded particles, dirt, etc. were brushed off with a soft cloth or a hand.

Openings cut for connections were reenforced by a small patch cut with pinking scissors. See diagram 5.

After brushing on and sanding about seven coats of clear dope, mixed with thinner, we were ready for spraying. At that stage the fabric had a polished hornlike appearance.

ROUND EIGHT

Sprayed. The spray gun was thoroughly cleaned first. Then the mixture was tested for spraying consistency. It should spray easily, about three parts dope to one of thinner. After several attempts, and lessons from various advisers, I learned to hold the spray gun at right angles to what I was spraying, and about 12 to 18 inches away from it. Press the lever *before* starting the actual spraying motion and keep the gun in motion over the wing, overlapping the spray swaths. Like mowing a lawn. "Always start spraying at the leading edge," advised one expert. He explained that that gave the leading edge a stronger base, as it should have. The spray swaths can go either across or along the full length of the wing, or both, but the whole surface should be thoroughly covered.

If atmospheric conditions are not right the dope may "blush," that is, take on a milky appearance. This did not happen to my attempts but on several days I had to halt because of excessive moisture in the air or because it was considered too cool. The use of more thinner is supposed to help this complication.

Spraying and sanding were alternated for several coats, the sanding being done with #240 sandpaper, only when the dope was thoroughly dry. Excessive dope which made ripples, etc. had to be sanded off, but I had to watch and not sand through the finishing tape over those precious screw heads.

ROUND NINE

After about 12 coats of clear dope had been applied, aluminum dope was put on to cut out the ultra-violet rays of the sun and thus cut down on the deterioration of the fabric. First about one pound of aluminum paste was blended with a very small amount of dope, then added to increasing amounts of clear dope until it made five gallons of aluminum dope. Enough thinner was added to make it spray nicely and then it was applied to the wings, using the same technique as before. Allowed to dry, it was sanded with #400 sandpaper, very gently. Another coat was added, until all surfaces were thoroughly saturated with the aluminum, then allowed to dry.

ROUND TEN

As we wanted a different color for the wings, three coats of white were sprayed on. Darker colors absorb more sunlight than lighter colors. White reflects more of the rays than any other color and black absorbs more than any other color. So the lighter the color used, the longer you may expect the fabric to last. However, everyone does not agree that white is the best color. One of my many advisers insisted that we would regret its use, though he did not explain why. We have already discovered one reason. It gets dirty very easily.

We sanded between coats on the white with #400 sandpaper very gently. We left the last coat unsanded.

While checking back on the process, one man came up with a problem of the peeling of this last outer color. The solution, he said, was in the manner of applying this last color. If it is "sprayed wet" it will not peel. If "sprayed dry" it will. In other words, this last finishing coat should thoroughly saturate the preceding coat, *not* just be sprayed on as thinly as possible.

ROUND ELEVEN

Applied the numbers. We used commercial stencils, followed directions with the set for application, fastened them securely with masking tape which was carefully pressed down to avoid any running. Aprons of newspaper were used to cover the rest of the wing surface. Then the numeral color was sprayed on—several coats, as each one was very light. When the desired shade was reached the whole was allowed to dry thoroughly before the stencils were removed.

Inspection plates on the lower surface, being metal, were painted with enamel.

The bout is over. And we are duly proud of our new wings! END

Atlantic Lifeline

(Continued from page 33)

ship pinpoints its location in a specific square, it transmits the coordinate letters of that square with its beacon signal. The plane identifies the square the ship is in and draws its bearing from there.

Loran is the ship navigator's mainstay in finding his position. A gyroscopic tracker helps him to keep it. The invaluable tracker automatically records the ship's speed and course from a given point. But even this device cannot account for drift and skidding in heavy weather. The harried surface navigator must depend on constant verification from loran, and an occasional celestial shot if the skies permit.

For the three weeks each ship is on patrol, it's pretty much all work and no play for the crew. The cramped quarters of the ship discourage the usual recreational pursuits. Some men load up with books and magazines, while others work at hobbies in their off time. At least one industrious seaman makes his "sack time" pay by repairing watches for his mates.

Last Resort

After a few weeks of steady concentration even the most elevating diversions begin to pall, and eventually almost everyone succumbs to the card game which the less imaginative men start the first day out.

A line-of-duty diversion that interrupts tedium is the emergency drill called by the captain almost every day, weather permitting. Life on a small ship tossing in a restless ocean can often be hazardous. Frequent simulated emergencies remind the crews of the real danger.

Threat of having a man carried overboard in a severe storm is an ever-present possibility. The drill to keep crewmen on guard starts as the captain tosses a life preserver overboard, thumbs his stop watch and sounds the alarm.

Immediately, the powerful engines rev up to greater speed and the ship heels over to come about in a tight turn. Lookouts scan the trough of the waves. As the ship pulls up at the point of simulated emergency, the engines are cut and crews scramble into lowering boats to scour the sea until the "man" is found. Then the captain's stop watch stops ticking off the critical seconds. In some Atlantic waters a man overboard isn't expected to live more than a few minutes due to the numbing cold.

The following day the fire drill might sound, or collision and abandon ship be simulated. The day after, the survivor pickup may be called for.

Training Pays Off

In the only ditching of a transatlantic passenger plane since the war, the crew of the Coast Guard cutter *Bibb* set a standard of skill and courage that ranks high in the annals of rescue at sea.

It was 1947. The *Bermuda Queen*, a giant non-scheduled flying boat, ran out of gas after encountering severe headwinds on the westbound crossing. In spite of 20-30 foot waves, the stricken plane landed safely on the ocean beside the *Bibb*. Working swiftly and surely, the crew of the *Bibb* took all 69 persons safely off the plane before it broke up and sank hours later.

From captain to cook, each man on the weather ship must be a double-barreled expert. He must be a pro at his regular job, and resourceful and daring in the event of any emergency.

While the primary mission of the weather ships is to guide transatlantic planes accurately along the ocean's airways, the men are also determined to help maintain transatlantic flying's perfect safety record. END

Zurabatic Cartwheel

Jan Zurakowski, world famous test pilot who recently joined Avro Canada in that capacity, is regarded with awe in aviation circles as the inventor of an aerial maneuver known as the Zurabatic Cartwheel, performed in a Gloster *Meteor*.

Described as "the first entirely new aerobatic in 20 years," the maneuver is a sideways cartwheel carefully worked out by Zurakowski on the slide rule before he attempted it in flight.

To an Avro Canada colleague, "Zura" Zurakowski explains the cartwheel as follows:

For the vertical maneuver, the airplane is first put into a full power climb and then, when the speed falls to between 60 and 70 knots indicated air speed, one engine is shut down. The assymetric power throws the *Meteor* into a cartwheel and, after three quarters of a turn, the remaining engine is shut down.

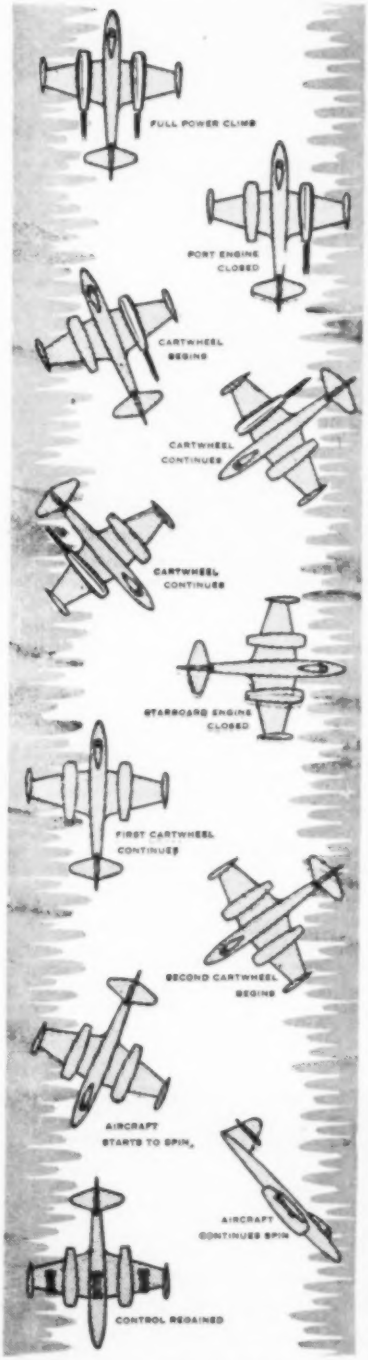
Jan Zurakowski

The *Meteor* is allowed to continue to cartwheel until one and one-half turns have been made, at which point it is nose down and beginning to spin. All that is then necessary, says Zurakowski, is to start the normal recovery action so that, after a further one quarter to one half turn, the aircraft is again completely under control.

With the PV *Meteor*, carrying 24 rockets, a speed of about 100 knots is attained before the spin is controllable, but without rockets it is controllable at about 90 knots. The whole evolution requires about 3,000 to 4,000 feet of altitude, most of this being needed for the spin and recovery.

Zurakowski explains that little handling of the controls is required until the spin starts as there is no means of stopping the cartwheel until enough speed has been gained for the rudder to become effective. It is essential to get the airplane absolutely vertical since it will slip out if there is the slightest deviation from this position and will then go into an inverted spin or similar maneuver.

The engines are closed down but not cut completely. Zurakowski, who admits that the maneuver is difficult to perform perfectly, believes that the cartwheel could be done on any twin-engined aircraft with widely spaced thrust lines provided the wing dihedral angle is not too high since this would cause a tendency to roll once the aircraft had started to turn.



Zurakowski insists there should be no danger in performing the maneuver, provided the pilot knows how to recover from a spin.

Zurakowski, educated as a Polish officer and a Battle of Britain pilot with the RAF, joins Avro Canada to test fly the CF-100. This is the 55th aircraft type he has flown. END

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F.B. Check one: ☐ Veteran ☐ Non-Veteran

OPERATORS' CORNER

National Aviation Trades Association (NATA) is a service group that represents all service segments of the airport, fixed-base and air service operator. Its staff represents a federation of State Chapters and Members-At-Large. Its purpose is to fountainhead all activities of the American Operator, and to act as a sounding board for better public relations. Its aim: to improve air service operations and promote greater aircraft utilization.

Headquarters are located at 1346 Conn. Ave., N. W., Washington, D. C. Members receive a monthly "Washington News Letter" of confidential legislative and policy news in the making.

National Air Taxi Conference, same address, an affiliate of NATA, represents operators engaged in perfecting and standardizing a system of "through" air transportation.

Opinions expressed in this column are not necessarily those of FLYING Magazine.

CAUGHT BY THE CAMERA are: (l. to r.) Charles A. Parker of Washington, NATA Executive Director; Robert Northington of Winston Salem, N. C., NATA President; Martha Anne Woodrum of Roanoke, Va., NATA Convention Chairman, and Charles F. Horne, CAA Administrator.

Parking Problem

California Aviation Trades has recommended that all airports in that state adopt a small parking charge, except for quick transients and airplanes left attended. As the Operator has a certain liability, it is felt that a nominal charge is reasonable. Most believe it better to have a small fee and help keep the airport in business, than charge nothing and close the airport. Other states are considering the subject.

Plane Utilization

Tom Ferguson of Albany, Ga., installed rural air delivery of newspapers seven years ago, via Taylorcraft. Since then, residents in central Georgia have rarely missed daily service.

Fly-In in the Ointment

Operators are torn between desire for revenue and the loss-risk in sponsoring "Fly-In Breakfasts." I have yet to find an operator who hasn't made a little money and, what's more, created local interest in his operation. Give private pilots a place to go, and they'll stir up the necessary enthusiasm. Several years ago, quite by accident, we stumbled into free doughnuts and coffee at a small airport in eastern Ohio. Remember that airport? We've never overflown it since.

Model Airplanes

One airport manager writes that he supplements his income by stocking model airplane kits. Not only does he show a profit from these, but he attracts the next generation to his place of business. He suggests that all aircraft builders engineer and market models of their planes as sound promotion.

Post Office Exams?

NATA has suggested to the CAA that private license exams be given at Post Offices, as a convenience to all pilots, including those who work all week for a living. CAA replied that the Post Office refuses, but that CAA District Offices will include night examination dates in their itineraries. Still seems like a good idea.

Dusters Deferred

We point with pride to the fact that, through efforts of NATA, all you dusters and sprayers are now excused from the walking army. You have been placed on the critical occupations list.

Ohio ATA

Air tours are becoming so popular in Ohio that Operators have determined a standard rate for all passengers. Planning of tours is simplified by a flat rate of five cents per passenger mile, plus Federal tax. All ships engaging in this "aviation selling" will have complete passenger liability insurance coverage.

Two Members at Erco

Bob Sanders reports that the Sanders Aviation Co. (Ercoupe fame) has concentrated on service work and Ercoupe parts, and Dudley Hill of Erco Field Aviation Service has taken over Erco Field, Riverdale, Md., operation. Both operations welcome visitors to the Washington, D. C., area.

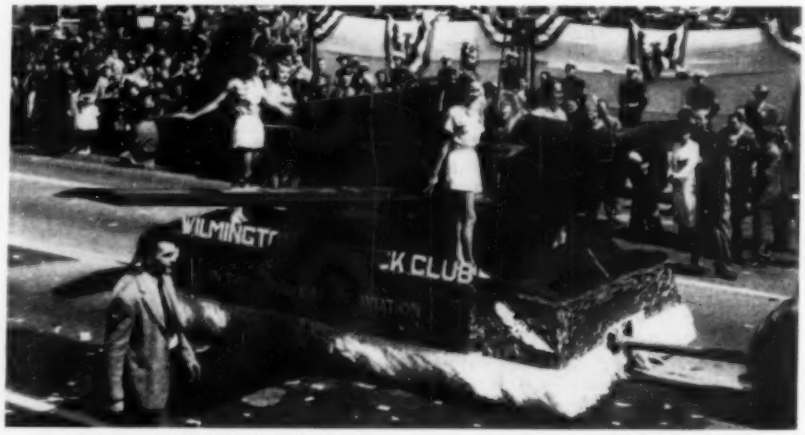
Action in Georgia

The Georgia Aviation Trades Assn. (GATA), can talk a lot faster than its northern counterparts. For some time, Georgia Operators had a six-cent fuel tax hung on them. The boys down there went to bat. Tom Ferguson of Albany and Evelyn Greenblatt of Atlanta led the fight. When the hangar dust had settled, the tax had been removed.

Start Planning NOW

. . . for that big annual NATA Convention. It'll be at Los Angeles, the second or third week in November.

—Ed Hoadley



THE WILMINGTON (N.C.) Windsock Club has one purpose: "to maintain interest in aviation." This float, seen by 200,000 spectators at the Azalea Festival, was created by local members. The Club was formed by Jack D. Bennett, who hopes someday it will be a national organization. Address the Club, % P.O. Box 1426, Wilmington, N. C.

Packing With Pounds to Spare

Travelers taking advantage of the airlines' tourist fares to Europe are limited to 44 pounds of luggage.

How to pack an adequate wardrobe and still remain within the free limit is a problem the men must solve for themselves. For women travelers, Pan American World Airways has drafted the following blueprint (incidentally, a useful guide to all who travel by plane):

Plan to wear on the plane a wool suit and a nylon blouse and to carry a travel coat and spacious handbag. Limit your luggage to a 26" Pullman case and a hand-carried cosmetic case.

Pack in the Pullman case one dark wool dress (for spring or winter) or one dark cotton and/or silk; one short silk afternoon dress; one dark nylon for general wear; one long evening skirt; one nylon blouse for evening and one for daytime; one flannel skirt to match or contrast with the suit jacket; one pair of low-heeled shoes and one pair of dress shoes; one extra set of nylon lingerie, four pairs of nylon hose, six handkerchiefs, two scarves, a bathing suit, a dressy handbag, two pairs of gloves, and veils and ribbons as assorted accessories.

Into the cosmetic case pack a nylon robe, nightgown, slippers, blouse, underwear, stockings, jewelry case and cosmetics. Liquids are safe from leakage in plastic bottles, nail polish caps should be taped on, and solid perfume is conveniently leakproof. Sunglasses, rubbers, soap, washcloth, usual pills, and a camera with extra film fill the gaps in the cosmetic case.

PAA tried packing all this gear and, thanks to the nylon miracle, it weighed in at 40 pounds. The extra four pounds will come in handy for souvenirs on the return trip.

PAA also adds one restraining note: DO NOT take iron, slacks, shorts or halters. The iron won't fit European current, and the other items are strictly for wear on the home front.

Knotty Problem

(*Continued from page 35*)

only an estimate, but it is rapid and is far better than a wild guess. In the conversion from knots to mph the error will always be less than 2 mph and will usually be within 1 mph of the true figure. The conversion from mph to knots by this method will always be less than 2 percent in error and also will usually be much more accurate. END

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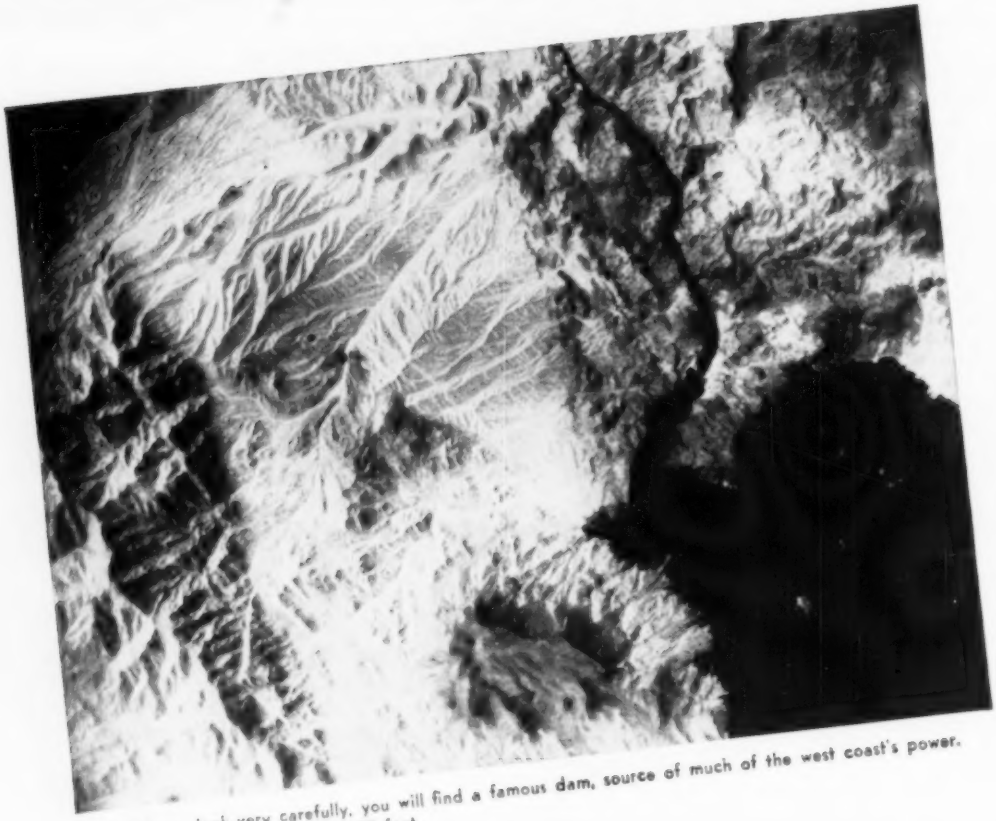

1. If you look very carefully, you will find a famous dam, source of much of the west coast's power. This is how it looks from 40,000 feet.

WHERE AM I?

One of the rewards of flying is an intimate knowledge of the face of our country. In successive issues of FLYING we will carry aerial views of landscapes with distinguishing markings. It's up to you to figure out the location. If you remember them all you will eventually have a pretty good idea of America.

SEE PAGE 59 FOR ANSWERS

2. Not the usual view of this city, the picture nevertheless shows one of the most famous buildings in the world.

3. The Air Force bases near this far northern city are key strongholds in the air defense of America. That's the Tanana River winding round the bend.

4. Headquarters of the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA) are located here.

5. New York has no monopoly on skyscrapers. These are in the midwest, on the banks of the Ohio.

PILOTS

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Super Salesman

(*Continued from page* 15)

vertising even if it was a josh.

Where to get an aeroplane? I had heard of the Wright brothers. According to the papers they had invented an aeroplane that had made some flights down at Kitty Hawk. They had tried to interest the War Department in their invention, had been turned down and were then over in France trying to sell their machine to the French Government. Cable reports said that they had actually made flights.

(Ed. note—Henry Farman had flown his biplane at Brighton Beach Racetrack in June, 1908—first chance for New Yorkers to see an airplane fly. In Sept., 1908, the Wrights had already set a world distance record of 50 miles, flying 1 hr., 14 min., 24 sec., in Government tests at Ft. Meyer, Va. They had also flown more than 100 flights at Le Mans, France, in Aug., 1908.)

The Wrights were out of reach and I had not heard of anyone else in this country who had been successful in getting a plane into the air.

Finally I went around to see Sam Butler, secretary of the Automobile Club of America. Sam didn't know much more about the subject than I did. He had heard that Glen Curtiss was experimenting with a flying machine. Curtiss was the manufacturer of a motorcycle and Sam's story was to the effect that Curtiss had been up in Canada at the estate of Alexander Graham Bell tinkering with the model of a biplane. He had recently returned to Hammondsport, N. Y., where his factory was located and claimed he had made a flight while in Canada. There was no confirmation of the story.

Contacting Curtiss

I returned to my office and decided to take a chance on Glen. I sent him the following telegram: "We want the agency for your aeroplane for Greater New York, Long Island and Westchester County. Wire terms." Inside of a couple of hours I received this reply.

> Wyckoff, Church & Partridge
> New York, N. Y.
> Herring in New York City. Will call upon you tomorrow morning.
> (Signed) The Herring Curtiss Aeroplane Company

Sure enough, next morning Herring appeared. He was a man past middle age with long hair turning gray. He did not seem to care much about dress or appearances. He impressed me as being quite the inventor type of the period.

Our conversation was short. He assured me that he could deliver a biplane inside of 90 days. Of course it would fly. The air had been conquered. Herring was anxious to sell and I was anxious for publicity. Inside of half an hour he left, but I had a contract which gave Wyckoff, Church & Partridge the exclusive right to sell Herring-Curtiss aeroplanes in Greater New York, Westchester County and Long Island.

By this time I had become so interested in the possibility of the free publicity that I had almost forgotten the customer who wanted to buy an airship. After Herring left I called in a stenographer and dictated a contract for Mr. Customer agreeing, for $6,000, to deliver him a biplane inside 90 days. One of our salesmen delivered the contract within 24 hours of the time I had received the inquiry. But it wasn't a sale.

On receiving this fine contract, Mr. Customer's nerve collapsed. He phoned and said, "Your salesman is here with this airship contract but say, do I have to take it?"

"You bought it, didn't you?"

"Yes, I know, but let me tell you what happened. Yesterday I was sitting in the Brook Club talking and drinking with a crowd of fellows and we got to talking about airships. I happened to make the statement that, in my opinion, the airship had arrived. The result of that was that one of the fellows offered to bet me $10,000 that I couldn't buy one, so I called you up. The contract is all I need to win my bet, but for the love of Pete don't make me take it. I don't want an airship. I wouldn't know what to do with it. I don't want to fly."

Sale Secondary

Well, the upshot of it was that I let him out of his contract. The publicity story had grown, in my mind, to larger proportions than the sale.

In order to get advertising in the form of free publicity it is quite necessary that your story have real news value. Of course the sale of the first aeroplane would be news, but from the start I had had the feeling that this wasn't going to be a sale. I had decided that there would be as much news in the first advertisement of aeroplanes for sale as in the sale itself. We might even sell one for a follow-up. I prepared the copy and the next morning the advertisement appeared in the Herald, Times and Sun.

It was a little larger than a half page and carried the announcement that we had been appointed the exclusive agents for the Metropolitan area. The principal display was a picture of the flying machine itself reproduced from a photograph supplied by Herring. The picture made it look like real business, but of course what I was trying to do was to sell automobiles.

It was news.

It didn't seem to make much impression on the Herald, Times and Sun. To them it was advertising, but to other papers it was news. The World gave us a column editorial on the Pioneers in the New Industry. The Associated Press sent out a long news story on the first aeroplane advertisement. One of my partners who was in Paris cabled congratulating me on the publicity we were getting in Europe. The advertisement was copied as news in papers all over the world.

At the time, we were subscribers to a clipping service. Any article about our organization was clipped out and sent to us at so much per inch. When the Bureau began delivering clippings by the express wagonload I had to cancel the service.

Unexpected Outcome

Of course we had a marked increase in the sale of automobiles. Our mail jumped to 1,000 letters a day. The peculiar result that I had not expected was that we sold aeroplanes.

A short time after the advertisement appeared a salesman came rushing up to my room. "There is a Mr. Warner downstairs who wants to buy an aeroplane and nobody knows what to tell him." I went down, met him, and in about 15 minutes had his check for $1,000 and his signed contract for the first aeroplane ever sold. Fortunately he did not want a demonstration.

The machine was sent out to his speedometer factory in Wisconsin. About three months later I saw him coming into the salesroom and of course knew that there was something wrong with that aeroplane. I asked him if he had received it. "Yes." Any trouble in assembling it? "No. It went together very easily." How about flying? "I've made about 50 flights." With that, he pulled a photograph out of his pocket showing his factory buildings, all of the employees outside looking up in the air and Mr. Warner sitting in the plane sailing some 20 feet above the roof of the factory.

Another result of our publicity was that Curtiss was prevailed upon to come to New York and give a demonstration of flying. When he arrived with his plane we asked how we could be of assistance. His only request was for us to locate a place for him to fly. It must be level and straight and should have a hard surface. We arranged for the use of the straightaway at the Morris Park race track and Curtiss said it was just what he wanted.

The plane was taken out there and assembled in a tent. It did not take very long to put it together. It looked pretty frail to me and I was pleased that it had only one seat. It was of the pusher type with its propeller behind. The seat was in front (ahead of the motor) with all outdoors ahead of the operator.

Press Takes Note

As soon as the machine was set up and ready to go, we naturally notified all the newspapers to have representatives out to see our first demonstration. Curtiss had advised us that he would fly at four o'clock in the morning as there was less wind then than at any other time of the day.

At the appointed day and hour we arrived at the track—some members of the W. C. & P. organization and about a dozen

VETERANS HONORED

The Jennings Brothers, Mason and Perry, were honored guests at the New England Aviation Banquet, held at the Hotel Sheraton in Worcester, Mass., this spring. For 16 years the two brothers, who are Cessna distributors in New England, operated the Jennings Brothers Air Service at North Grafton Airport. "Their safety record and the accomplishments of the pilots they trained give eloquent testimony of their fine work," ran the citation presented to them by the Worcester Chapter of the NAA, as the brothers left the Bay State to establish a new service at Providence, Rhode Island.

ANSWERS TO "WHERE AM I?"
(PAGES 56-57)

1. Boulder Dam, Colorado.
2. Washington, D. C.
3. Fairbanks, Alaska.
4. Montreal, Canada.
5. Cincinnati, Ohio.

reporters. Curtiss was stopping at a hotel in the neighborhood and at daylight appeared, but only to disappoint the crowd. He pointed out that the leaves in a nearby tree were moving which would make it dangerous for flying that day. So we had to go back to the city to wait for better weather conditions.

Day after day we went out, but there was too much air movement. Finally a day arrived when there was no wind. Not a leaf stirred, and we knew the fateful day had arrived. We were wrong. Curtiss went into the tent and brought out an instrument used in mines to detect air currents. I remember that it looked like a small electric fan. He set the instrument up on a fence post and the fan slowly revolved. So there was no flight that day.

Finally, however, we had conditions exactly right. Even the air detector showed no signs of life and there was nothing left to do but attempt the flight. The flaps of the tent were drawn back and the plane wheeled out on the track. Curtiss asked us to hold onto the ship while he started the motor and climbed into the driver's seat. Controls were tried and everything, including the motor, functioned perfectly. Finally Curtiss yelled, "Let go." We did, and the machine started slowly down the straight-away.

20-Foot Flight

It gradually increased in speed and when it arrived in front of the grandstand it must have been going about 20 miles an hour. At that point it rose into the air. And came right down again. We estimated that it had hopped about 20 feet. That made a field day for the reporters. They all rushed to telephones. The first flight in New York City of a heavier-than-air machine had been accomplished.

After that first flight Curtiss gained confidence daily and in about a week he announced that he would have to have more room, the straight-away was not long enough. Someone suggested a field over near Jamaica, so we took his plane and tent over there. Here he really began to fly. He no longer objected to a light breeze and, while he did his flying at daylight, he now had given up the use of the air detector. Some of his flights were several hundred feet long.

I was fortunate enough to be over there the day he made his great discovery. That day there was no wind and he announced that he was going to try and beat all previous records. He made a quick start and flew all of the way to the other side of the field. Just before getting to the woods he came down very suddenly. He almost seemed to drop. So we jumped into an automobile and rushed over to see what had happened. When we arrived at the plane Curtiss was out of his seat waving his arms in the air and very much excited.

We had trouble finding out what all the excitement was about, for all Curtiss could say was "I've got it. I've got it." The machine was not damaged and finally he asked us to haul it back to the starting point. On the way back he managed to explain that what he had "got" was an idea that might enable him to make a turn.

Figuring Out the Turn

It seems that when he neared the woods he had started to turn, but the rudder had no effect as to direction. The nose turned, but the plane continued straight on in the same line in which he had started. He had figured out that it would be necessary for him to bank the plane so that he could make a turn without slipping. It worked. On his next trial he made a complete circuit of the field at about 50 feet elevation. As he passed over me he waved his hand, his face wreathed in smiles. He probably got more kick out of that flight than from any other he ever made.

From that time on Curtiss had conquered the air. By August he was so sure of his plane and of his ability to fly it that he went to Europe to enter the first International Aeroplane Contest. There he competed against Bleriot, Farnum and most of the early bird-men.

On August 29 he won the Grand Prix de la Vitesse with a cash prize of 25,000 francs. In that event he flew the twenty kilometers in the astonishing time of 15 minutes, 53 and 35/100 seconds—the world record for speed. END

Royal Pilot

(*Continued from page 20*)

guished confrere and editor of *Avia-Vliegwereld*, The Hague, tells us that Prince Bernhard is as good on skis and on horseback as in the cockpit. In fact, it was his Alpine skiing that first called the attention of Princess Juliana to Prince Bernhard in 1936.

Kosman authenticates the story that the boys who originally gave Bernhard his pilot exams diplomatically broke him of the habit of landing his light plane on cow pastures where they were afraid, sooner or later, he would run into a ditch or crack up on rough ground. One meadow he used was near Steenwijk in eastern Holland, close to a racetrack.

The examiner asked: "Suppose Your Royal Highness landed on a civilian meadow, let us say near Steenwijk, and had not been forced to land by engine trouble. Would that be legal or not?"

Bernhard was trapped. If he said yes he would flunk the exam and if he said no he convicted himself. The Prince admitted his dilemma, and everyone was happy.

The Queen asked if there was any hope of the Prince passing the examination, and the examiner said: "Your Majesty, we are looking hopefully forward to the flight tests this afternoon." As a matter of record, the boys really bore down on Bernhard. They wanted to be sure that a real comrade and an admired patriot was truly qualified rather than dangerously complimented.

Come back anytime, Your Royal Highness. END

• Taylorcraft "Sportsman"

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2. Private Pilot's Handbook by Cdr. A. G. Norwood, USNR. Gives all the information the CAA requires for the Private Pilot's Certificate plus sample test questions. Meteorology, aerial navigation, radio, flight theory, CAA regulations, etc. are carefully discussed. Many charts, diagrams and photos. 300 pages. $4.50

3. Seaplane Flying and Operations by R. S. Fogg, W. D. Stroheimer, and D. J. Brimm, Jr.: A complete manual covering every phase of seaplane handling (including taxiing and sailing, taking off, flying cross-country, landing and docking), design, maintenance and operation of a seaplane base. " . . . of inestimable benefit to all pilots who intend to do water flying."—W. H. Beech, Pres. Beech Aircraft Corp. 218 pages. $4.50

4. Learning to Fly by Bert A. Shields: What a flying instructor always wishes he had enought time to tell the student and frequently omits. Valuable stuff about flying to learn and relearn, told in a clear and concise way. Numerous illus. 262 pages. $4.00

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CIVIL AIR PATROL

WING TALK

MR. TRUMAN ADDRESSES CAP

Honoring the 1952 annual Congressional Dinner of the Civil Air Patrol with his presence, the President of the United States, in addressing the dinner, stressed the part of CAP in civilian defense and in fostering the interest of youth in all American aviation.

Said Mr. Truman, "If we are to keep up with our responsibilities in the world, we must have a country that is air minded. We must have more and more young people all the time who go into the business of flying. I have been disturbed at the fact that there seems to be less interest in learning to fly during the last few years. That is not good."

The President related the story of his own first flight, when as a Captain of Field Artillery in the American Expeditionary Force in France, he was ordered to go aloft and learn the art of artillery observation. Mr. Truman also thought he might have set some sort of an aviation record when, in 1919, while campaigning locally for his first elective public office, he dropped hand bills over the towns and hamlets of his home County in Missouri.

GENERAL CURRY CITED

In recognition of his leadership of CAP, while acting as its first National Commander, Maj. Gen. (retired) John F. Curry, has been cited for distinguished service to the organization and appointed an honorary life member. General Carl A. Spaatz, Chairman of the National Executive Board of CAP, made the presentation at the annual Congressional Dinner in Washington.

NATIONAL COMMANDER'S REPORT

Major General Lucas V. Beau, National Commander, CAP, in making his annual report to Congress, called 1951 a year of expansion. Close of the year showed a muster of 34,500 adults and 42,383 cadets, enrolled in 1,536 groups, squadrons and flights of CAP.

General Beau pointed out that the new vigor of his Command was largely expressed in the volume and quality of training accomplished. Some 35,000 cadets took extracurricular aviation courses and another 6,500 were enrolled in regular aviation courses in 225 different high schools.

Cadets piled up 47,680 flight hours in orientation and adult members flew 20,000 hours under official orders. Of these hours, 9,100 were in search and rescue and the remainder in various tasks such as Civil Defense missions, Red Cross courier service, forest fire spotting and various emergencies. More than 500 hours were flown by CAP in evacuation and reconnaissance during the flood disaster of recent date.

The year saw 14 CAP members lost on official duty and 10 suffering major injuries.

General Beau pointed out that CAP's radio network is the largest in the world under one head, with over 9,000 stations activated, 85 percent of which are mobile.

CAP TRAINING CAMPS

This summer sees 6,000 CAP cadets allocated to 40 different Air Force Bases in 10 major commands of the USAF, for periods of training.

Held each year since the end of the war, the summer training assignments find the cadets detailed to on-the-job location with various Air Force specialists. Individuals pay for their own rations and attend camp on "scholarships" provided by various civic groups from local communities.

Among the courses studied under supervision of Air Force specialists are meteorology, navigation, line maintenance of aircraft and engines, and operational procedures.

Members of Kahului Squadron, CAP, on the Island of Maui board a MATS C-54 at Hickam AFB, Honolulu, after winning Hawaii Wing drill team honors. The Squadron may visit the U.S. in August to enter national drill competition.

Cadets of Cheyenne Squadron, Wyoming Wing, display their cadet flag, hand made by Lt. Wanda Comstock, commandant of cadets. Pictured here, l to r, are Karen Dee Moschel, Patricia Gunnoude, Mary Ellen Underwood, Carol Cathers and Mary Lou Spicka.

CIVIL AIR PATROL ENCAMPMENTS

SITE	DATES	CAP WING(S) ATTENDING
AMARILLO AFB	(23 June-7 July)*	Texas
ANDREWS AFB	28 June-12 July	Natl. Cap. Md., Del.
ATTERBURY AFB	20 July-3 Aug.	Indiana
BARKSDALE AFB	(1-15 August /or 15-30 August)	La. & Ark.
CHANUTE AFB	1-15 August	Ill. & Wis.
DONALDSON AFB	27 June-10 Aug.	S. C.
DOW AFB	(15-27 June)*	Maine
ELMENDORF AFB	1-15 Aug.	Alaska
GOODFELLOW AFB	(14-28 July)*	Texas
GREAT FALLS AFB	5-18 June	Mont. & Wyo.
GRENIER AFB (Enc #1)	1-15 August	N. H. & Vt.
GRENIER AFB (Enc #2)	16-31 August	Mass.
GRIFFISS AFB	1-15 July	New York
HICKAM AFB	28 June-12 July	Hawaii
HILL AFB	26 July-9 Aug.	Utah & Idaho
KIRTLAND AFB	20 July-2 Aug.	New Mexico
LANGLEY AFB	23 July-6 Aug.	Va. & W. Va.
LOWRY AFB	16-23 August	Colorado
MARCH AFB	(10-23 August)*	California
MATHER AFB	2-16 August	California
MAXWELL AFB	16-27 June	Alabama
McCHORD AFB	17-29 August	Washington
MITCHELL AFB	27 July-10 Aug.	New Jersey
NELLIS AFB	7-21 June	Nevada
OLMSTED AFB	15-30 Aug.	Pennsylvania
PORTLAND MUNICIPAL AIRPORT	17-30 August	Oregon
RAMEY AFB	7-20 June	Puerto Rico
RAPID CITY AFB (Enc #1)	20 July-2 Aug.	Minnesota
RAPID CITY AFB (Enc #2)	10-23 August	N. D. & S. D.
ROBINS AFB	20 July-2 Aug.	Ga. & Tenn.
SCOTT AFB	20 July-2 Aug.	Mo. & Iowa
SELFRIDGE AFB	17-30 August	Michigan
SHAW AFB	9-22 June	No. Carolina
STEWART AFB	16-31 July	New York
TINKER AFB	10-23 August	Oklahoma
TYNDALL AFB	(1-15 Aug./or 3-17 Aug.)	Florida
VANCE AFB	27 July-10 Aug.	Neb. & Okla.
WESTOVER AFB	4-17 Aug.	Conn. & R. I.
WICHITA AFB	16-30 August	Kansas
WILLIAMS AFB	3-18 June	Arizona
WRIGHT-PATTERSON AFB	(30 July or 1 Aug for 14 days)	Ky. & Ohio

(*NOTE: Firm commitments not received at date of going to press.)

Parks Air College Completes 25 Years

Parks College Air Line is operated from this modern airline office that is also a college classroom. Traffic and operational procedures are fully covered here, and many former "employees" are now employed by the world's leading airlines.

It was on August 1, 1927, that Oliver L. Parks opened the doors of a rented hangar at Lambert Field in St. Louis, Mo., and started the flight school that today has grown in stature into a full-fledged college. In 25 years, Parks College of Aeronautical Technology of St. Louis University has provided the aviation industry with more than 3,300 trained employees.

Back in 1927, the school's equipment consisted of two airplanes and one flight instructor—Oliver Parks. During the year that followed the college was almost wiped out when Parks crashed in one of the two ships and was seriously injured.

The few students who were enrolled lost interest and were about ready to demand their money back when Parks, just out of the hospital, sold them on a plan for a new school at a new 100-acre site about three miles south of East St. Louis near Cahokia, Ill.

By the fall of 1928, five buildings had been erected and operations consisted of flight instruction, charter service, sightseeing rides and airplane and engine overhaul. A 50-hour flight course was instituted and within a year 600 students were enrolled and 35 airplanes, mostly Whirlwind *Travelairs*, were in operation.

In the years that followed the school received the first U. S. Department of Commerce Approved Certificate as a Transport and Limited Commercial Ground and Flying School and also became an Approved Repair Station. Many of the ships that raced in the early National Air Races were readied here and such fliers as Doolittle, Lindbergh, Earhart, Mantz, Hawks and Goebel were frequent visitors.

An Executive Transport Pilot's course was added, and regular college training became part of the Parks program.

The College pioneered in operating a student airline to train young men for a career in commercial aviation. The original airline, started in 1935, was flown from Parks Airport to Indianapolis. Today advanced students in this course, using a twin Cessna UC-78, operate scheduled service from Parks to Chicago, Indianapolis, Memphis and Kansas City. Now in its 17th year, the airline has a perfect safety record.

As early as 1939 Oliver Parks conferred with leaders in Washington on the speedy training of Air Force men by civilian operators. By 1942, Parks' Army Air Force program was being conducted at five bases in the south. The five schools trained 24,000 pilots—one out of every 10 pilots of the AF—and also trained hundreds of mechanics.

In the fall of '46, Oliver Parks turned his $3,000,000 investment over to St. Louis University. As the Parks College of Aeronautical Technology it became the 19th school of the Jesuit university. The major school programs—Aeronautical Engineering, Air Transportation, and Aircraft Maintenance Engineering—were expanded to three full years.

Parks College was selected in 1947 as one of the first schools to present the Air Force ROTC program to college men. In 1951, Parks was again called on by the Air Force to start a training program for airmen in the fundamentals of aircraft maintenance.

END

Weather Wisdom

(*Continued from page 22*)

ocean, soupy and sluggish. It is like a fog that becomes thicker the further you go into it. The air will be stabler and you will find fewer thermals, but the average flyer would rather have bouncy atmosphere with some blue holes in it.

In that skinny diagonal cross-section you'll find mention of halos. The sun and moon, when shining through ice crystals, produce a halo effect; and the frequent cause of large masses of high altitude cirroform (ice crystal clouds) is the pushing ahead of a warm air mass.

When the ceiling lowers to altostratus, the outline of the sun and moon will have become shapeless and with the general effect of a ground glass disc. Although a few halos, particularly during winter, might have no association with a warm front, the combination of first a halo and then a shapeless disc sun becomes a sure bet.

There are a few good things we can say about a warm front. It gives you plenty of warning. It is slow. It is not turbulent or squally. It's a big, lumbering piece of weather machinery. Like a fat man, it seldom gives way to temper. END

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FLYING FARMERS

By BILL RENSHAW

PETTICOAT PANEL

The ladies, oft accused of keeping friend husband from buying an airplane, stole the show at the Flying Farmer Clinic held recently at the University of Illinois.

Asked to talk on "We are not selling our airplane because, . . ." the girls made the case so strong that one FF who had just spoken on "I sold my airplane because . . ." declared, "I am going to buy it back."

Strongest point made by the panel of petticoat flyers was the happier living made possible by an airplane on the farm. Said Mrs. Carrie Disosway, panel chairman, "Flying is fine recreation. It kills the every day monotony and boredom of modern life."

In a lighter mood Mrs. Disosway declared that they had become quite sentimental over their airplane, adding, "It is part of us."

Noting that some airplanes lose their homes because of high costs, Mrs. Disosway concluded, "there isn't any honor in being the richest man in the cemetery, so we're going to keep our plane and enjoy it."

Mrs. Evelyn Farley, who also made a strong case for an airplane on the farm, said she woke up to the fact that she had married a potential flying farmer when husband Ralph took her for her first airplane ride on their honeymoon. "I decided," Mrs. Farley continued, "that if Ralph loved to fly I would love it too."

Mrs. Farley told the more than 500 FF's attending the Clinic that the Farleys couldn't sell their airplane if they wanted to—"our three daughters wouldn't let us. They too love to fly."

After pointing out that their airplane has given them access to pleasure and cultural opportunities they would otherwise have missed, Mrs. Farley concluded, "We hope we will never have to sell our plane. If grounded we would suffer a severe loss in our business, educational and cultural opportunities. Flying has enabled us to lead a fuller life and has given us a greater joy in living."

* * *

BENEDICTION FOR AIRMEN

Midwest flying farmers, basically religious, have long closed each meeting with a prayer. Most of these benedictions have been offered by lay members like Walter Kimble of Edgar County, Ill. Secretary of the Illinois "wing," Kimble closed the recent FF clinic with a prayer which is being used with slight modifications at many flying farmer meetings. Kimble's benediction, scribbled hurriedly on a paper napkin, is in part as follows:

"Our Heavenly Father, we who traverse the wide expanse of the heavens look to Thee always as our co-pilot. Ever conscious of Thy presence, we know that with Thy hand leading us we shall not fall.

"We thank Thee, Father, that we humble mortals are privileged to make our way through the unending blue of Thy heavens, as we pioneer this mode of travel which Thou hast shown unto us in Thy good time.

"Bless, we pray thee, our efforts to use the airplane as an instrument of peace and good-will among all men.

"Now unto Him the Great Navigator who has kept us from falling and who has guided us homeward on so many flights, we pray for a heading that will bring us at last to a happy landing at our great home port in the skys—AMEN."

* * *

PLANES UNITE FAMILIES

The "old folks at home" are responsible for many flying farmers hanging on to airplanes that might otherwise have a "for sale" sign hanging on the prop.

Scores of flying farmers have written in recent months saying that due to shortages of farm help they find little or no time for flying during the week.

Several have added, however, that the ability of the plane to take them home to see mother and dad on Sunday is causing them to keep their airplane when business judgment says it isn't being used enough to "pay for its keeps."

John B. Fillman of Mazon, Ill., sums up the decision of many by saying, "In these days when help is so short and we are so busy our airplane affords my wife and me our only chance to visit her folks and my folks, all of whom live some distance from our home."

* * *

S. D. SOLUTION

"By the time you get in the pattern and land at Lake Andes, South Dakota, there will be from one to five cars at the airport office ready to take you to town."

That is the way Chuck Palmer, Secretary of S.D. FF's answered our question as to how can we solve the problem of transportation to and from the airport.

"It is our own fault that we find no transportation at the airport," Palmer continues, adding, "more Mother's Day Flights, more Kiddie Airlifts and there'll be transportation."

"This interest in aviation at Lake Andes," Palmer concludes, "was created by a few flying farmers who believe in the future of aviation.

* * *

TWO'S COMPANY

"Never fly anywhere alone" is the formula given for selling private flying by Chuck Palmer, Ravinia, S. D.

Palmer, who is secretary of South Dakota flying farmers, has a fetish for practicing what he preaches. "A few minutes on the phone," he says, "and I have company." Naturally some who just go along for the trip are bitten and learn to fly. Formula, if adopted on a national scale, could well sell another 20,000 farmers on flying in a couple of years.

* * *

4-H AIRLIFT

Airlifts for 4-H'ers is the latest project of Edgar County, Ill., flying farmers. Patterned after the Kiddie Airlift held at Anderson, Ind., last fall this newest movement is designed to sell aviation to a more mature group of rural boys and girls.

Under the careful planning of Walter Kimble, Secretary of Illinois FF's, 4-H'ers will be flown without charge, with Edgar County flying farmers furnishing the airplanes.

Until the bugs are ironed out, only members of one club will be given an airlift per week.

In addition to being given an introduction to the airplane the 4-H boys and girls will be shown the ravages of soil erosion, thereby giving the airlifts a two-fold purpose.

* * *

MARINE ON JCS

Legislation to make the Marine Commandant a member of the Joint Chiefs of Staff along with the heads of the Navy, Air Force and Army would be written into law if flying farmers had the job of enacting laws. Of the 37 flying farmer officers who replied to our recent questionnaire on this subject, 28 said they favored this proposal, three opposed it, five had no opinion, and one said it was none of his business or ours either.

Miss Ama Lee Jameson, FF secretary in Texas, said, "the Marines always get some of the toughest fighting. Why not let them have a say in the planning?"

Walter Kimble, secretary in Illinois, who also voted "for," summed up his reasons with: "The Marines have again proven, by their bravery and outstanding performance, that they deserve a place on the Joint Chiefs of Staff."

Midwestern flying farmers petitioned their congressmen to pass such legislation almost three years ago.

* * *

TAXES DEBATED

Indiana flying farmers leaning toward a gas tax to be used for aviation purposes deferred recommending such a tax pending the outcome of the present national emergency. Prime factor in the postponement was heavy taxes of all types presently imposed.

Resolution opposing gas tax at this time contained a strong recommendation for state registration of aircraft. Registration, as proposed, would replace personal property tax now imposed on a hit-or-miss basis. Proposal would return at least half of registration fee to local unit of government, which means that in Indiana local governmental units (townships) would probably be better off than they are now. The registration as proposed would add uniformity to the present highly inequitable system of taxing light planes.

It is argued that such a registration would bring in considerable revenue from aircraft not now taxed.

May we use your restroom?

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Strato-Port

(*Continued from page* 11)

In case of engine failure of one sort or another, the damage usually originates during the period of full power take-off. To get away from the necessity for use of full engine power at any time is a worthy objective.

If we can avail ourselves of initial boost provided by gravity, we reduce take-off engine boost, thereby decreasing the chances of engine failure.

Another thing I should mention is that maintenance of this single runway will be by far more economical, particularly during the winter months because most snowdrifts will be kept from the runway and our problem will be only cleaning and clearing of actual precipitation.

Since the operation of all incoming and outgoing planes takes place from the center of the runway, the taxiing distance is considerably reduced with a corresponding lowering of taxiing cost.

Rather than further elaborate on the significance of the Strato-Port, let me conclude by quoting some opinions of individuals who have long been associated with the various phases of the aviation field.

Suggests Trial

John Gill, Chief Pilot of Eastern Air Lines, for instance, writes:

"I am personally of the opinion that the day of the multiple runway airport is past, at least for transport and heavier, faster type aircraft.

"I believe your proposal should be tried out full scale as a joint Civil-Military project."

Casey Jones, the old-timer in the aviation industry, among other things says:

"Your proposal for a two-directional runway appears to have a great deal of merit . . ."

Jerome Lederer of the Flight Safety Foundation puts it this way:

"The Uni-directional runway appears to be the answer to many problems . . ."

W. D. Guthrie, the airport consultant, says in his letter to me:

"Your ideas expressed to me for a two dimensional runway are not only revolutionary, but have great merit, and, in my opinion, should be carefully tried out."

Major Alexander P. de Seversky has this to say in his letter:

"I was very much impressed with your idea of a two-dimensional runway Strato-Port. I agree with you entirely that the development of airports has not kept pace with the development of aircraft. . . .

"May I congratulate you on your courageous forward thinking."

Pilot's Viewpoint

S. R. Parkinson, check captain of Eastern Air Lines, writes as follows:

"I have studied the Jordanoff Airport Project from every conceivable angle and feel that it is the answer to many problems that have become so acute in the past few years:

"1. To allow approach and departure patterns to be planned over the least congested areas.

"2. To reduce noise radiation during high power output sector of take-off run.

"3. To provide faster acceleration and deceleration.

"4. Better runway lighting and future addition of fog dispersal.

"5. To reduce taxiing and engine ground time.

"6. To facilitate snow removal.

"7. To improve approach and departure control through the use of more precise check points.

"We cannot ignore any proposal that will promote safety in the air and on the ground, and certainly this seems to be a step in the right direction."

Robert W. Gallaway, general manager, Westchester County Airport, writes me:

"I am quite convinced that this system would prove to be practical, and a tremendous safety factor as well as an economical use of property for airports, particularly located in congested areas.

"I will take this opportunity to congratulate you on a tremendous idea." END

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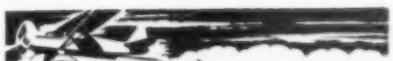
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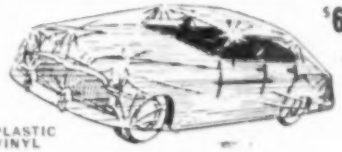
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ELECTRONICS TO SHIPBUILDING

Having won the famed Collier Trophy in aviation, William P. "Bill" Lear adds marine designing to the list of his achievements. Collaborating with the noted designer, Francis Cregar, Lear has produced the first sailing cabin catamaran ever to be built in this country.

Used by the Polynesians of the South Pacific for long ocean voyages, the catamaran in its original form was no more than two dugouts spaced apart by outriggers and supporting a platform between them.

Lear's development of the original design, christened the LearCat, was recently launched off Santa Monica, Calif., where the unique craft aroused great interest among sailing folk.

The LearCat is 35 feet long, has a 12-foot beam, and draws only 30 inches of water at anchor. The need for the heavy, deep keel of conventional sailboats is offset by the catamaran's twin arrangement. Her total weight is only 4,180 pounds.

She carries 560 square feet of nylon sail. The hull is constructed entirely of plywood and aircraft spruce. By employing principles of aircraft design and construction, it has been possible to overcome many of the structural difficulties encountered by others who experimented with this type of craft. The large, comfortable cabin in each hull, complete with bunks and lockers, is a feature of the LearCat.

The revolutionary arrangement of synchronized twin rudders makes the LearCat extremely maneuverable in any sea. Auxiliary power is provided by a 5½ hp outboard motor dropped through a well in one of the hulls.

The LearCat is extremely fast and is expected to do 25 knots under favorable conditions. The speed is due to the weight, clean design, omission of the conventional deep keel, plus inherent stability of the twin-hull design —it actually planes on the surface of the water.

LearCat with Bill Lear on deck.

Lear expects soon to have two smaller 12- and 16-foot versions of the catamaran in production. The 35-foot cabin cruiser will be custom built. The smaller boats will be sold complete less sails, in kit form or as partially prefabricated units requiring simple home assembly, finishing and rigging.

Information on the catamaran is available from W. P. Lear, LearCat Division, 11916 West Pico, Los Angeles 64, Calif. END

Thailand Takes Off

(*Continued from page 17*)

Thailand would be a very desirable spot strategically.

It's not easy to defend, but easier than any other available choice. Its border country is rough, a good defense. Port, rail and road facilities, though crude, branch out in all directions. Its seaport is protected by miles of swamp-like fields on one side and by Uncle's powerful Navy on the other.

Assuming that attack from the sea is not likely, the remaining possibility is the mountainous north country, or the less rugged Indo-China frontier. Small, well-coordinated Siamese units would have to put up a holding action until help could arrive.

The Thailand military machine plans to hold its first air-ground maneuvers shortly. Ground troops now undergoing rigorous training will have their first fling at tactical problems. At the same time, Devaveja and his boys will take over their role as part of this team, to pinpoint lethal fire power at the disposition of the Siamese soldier.

Siamese and American officers who have been observers in Korea are acutely aware of the importance of ground-air coordination. This explains the all-out effort to develop the Royal Thai Airforce into an effective unit, capable of operating in close support of ground troops. END

Let's Give Aviation Back

(*Continued from page 34*)

universal alignment of the individual with aviation until it is his own, 'to have and to hold.'

This, then, is the personal stake in aviation which we must and can develop. I say "we" can do it, meaning that it will come only as a result of the integrated efforts of every component of aviation. The flying clubs, pilots associations such as AOPA, schools, governmental agencies —all must continue their efforts toward indoctrination and education. They must cooperate to establish and maintain adequate safeguards such as proper inspections to assure airworthiness of the completed kit.

Industry Must Help

Our capable industry will furnish the keystone by providing the economy, integrity, and soundness of well-engineered, simple designs. Without such designs for light, simple, uncluttered airplanes we cannot succeed, for we lose the essentials of safety, simplicity and low cost.

The effects on individual aviation groups should be favorable. The possibility of additional numbers of private pilots obtaining their own A. & E. ratings will not be to the detriment of those to whom the rating is a means of livelihood. Any overall increase in interest will ultimately benefit all phases of aviation. The same holds for the manufacturer. In addition to providing him a new source of business, increased activity will create more demand for "ready-made" airplanes. For flight instructors, the benefits are readily apparent.

It is the object of this discussion to submit the premise that the kit airplane is a practical solution to the problem, and to stimulate further interest and discussion. It is hoped that many others will make the effort to substantiate or rebut the proposal. Only by constructive thought, freely expressed, can proper conclusions be reached. In reaching these conclusions, the desires and reasonings of the maximum number of aviation enthusiasts must be known to give sufficiently broad scope to the consideration of the factors involved.

We cannot permit the present system to continue, wherein aviation is dangled tantalizingly just beyond the grasp of the average man. The American public has reached, now, exactly the point where Mr. Aesop's fox found himself 2,500 years ago, looking at the grapes and thinking, "I didn't want them anyway."

Let's not let our private flying become sour grapes! END

PILOT AID

By BOB BLATT

AN EASILY made metal drip pan will help keep shop floors clean. Placed underneath engines, the pans catch all grease and oil which normally drops to the floor. This one was made of No. 18 gauge sheet metal and has an upturned lip, reinforced at the top with heavy wire beading to provide extra strength. The pan is light weight and can be moved about the shop from one spot to another where it will do the most good. A 3 by 4 foot size is usually large enough for most purposes.

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